First Copy

TECHNOLOGY DEPT.

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

Vol. 13. No. 1747 — Entered as second-class matter Aug. 27, 1925, Post Office, N. Y., N. Y., Under Act of March 3, 1879. — NEW YORK, THURSDAY, JUNE 9, 1932 — 5 Cents. $12 Per Year.

Auburn Announces Price Cuts Ranging From $300 to $800

Cord Says Company Is Planning Capacity Production; Program Is On; Hopes to Revive Industry Generally

Auburn, Ind., June 8.—The Auburn Automobile Company today announced price cuts on its 1932 lines ranging from $300 on the eight cylinder standard to more than $800 on the twelve cylinder cars.

E. L. Cord, president of the company, announced that his organization is planning a capacity production program, with this reduction in the prices of present models as one of the new features of the pan. The new prices will bring Auburn models into direct competition with those of the three present builders of cars in the lowest price bracket.

This Auburn program will have a far reaching effect in many communities, as the company has plants not only at Auburn, but also in Connersville, Indianapolis, Kalamazoo, Mich.; Cleveland, O., and Williamsport, Pa., this latter the Lycoming engine plant. Companies supplying Auburn with parts and equipment, which are located in many cities, will feel the effect of capacity production by this company.

The Connersville plant has resumed operations and will be turning out 100 cars a day within the next week. This plant has a capacity of about 130 cars a day. It is producing eight cylinder non-convertible models. Auburn will produce in the neighborhood of 40 convertible models at its plant in this city, in addition to about 35 twelve cylinder cars.

E. L. Cord in making his announcement said that his company is preparing to spend millions of dollars in its program "to help start the wheels of industry throughout the United States." The various Auburn plants working at capacity will furnish employment for more than 15,000 people.

SERVICE COMMITTEE RECOMMENDS FIVE CHANGES IN FIELD

New York, June 8.—The Committee on Plans for an Eastern Automotive Parts Terminal held a meeting yesterday in the Hotel Commodore in this city, with Ralph C. Rognon acting as chairman. The committee adopted a detailed report with five recommendations for changes in the service industry, a summary of which follows:

"The maintaining of motor vehecles is drifting away from the official automotive family into specialized groups. Super-service stations, and the brake, wheel, welding, machine, battery and electric shops,

(Continued on Page 4)

NEW TAX BILL GOES INTO EFFECT AT MIDNIGHT JUNE 20

New York, June 8.—There seems to be some doubt as to exactly when the provisions of the tax bill recently passed by Congress and signed by the President will go into effect. The actual deadline is midnight of June 20, 1932. The National Automobile Chamber of Commerce in an effort to get the automotive industry straight on all this is sending out the following bulletin:

"1. Following the signing of the tax bill by President Hoover, the Treasury Department ruled that all tires, vehicles and accessories bought and delivered before midnight of June 20 would be tax free, but that all goods bought or delivered after that time would pay the new excise tax.

"2. The committee of the chamber, of which L. A. Moehring (Chrysler) is chairman, with H. W. Webster (General Motors) and John E. Walker (Nash, White, Mack) is meeting with Treasury officials at Washington today to obtain final regulations, which will later be sent to all members."

N. A. C. C. Estimates May Output At 185,970 Units; 20% Over April

Official Estimate Compares With 190,000 Figure Arrived At by Automotive Daily News In First of June Survey

New York, June 8.—A 20 per cent. increase in automobile production for May was reported today at the meeting of the directors of the National Automobile Chamber of Commerce.

Production of passenger cars and trucks for the month was estimated at 185,970 units which was an increase of 20 per cent. in the output for the preceding month and was ⅘ per cent. under production for May, 1931.

The output for the first five months of this year according to the report was 714,040 units—48 per cent. under the output for the same period last year.

On May 31 Automotive Daily News conducted its regular monthly production survey of the industry, and as a result of telegraphic reports estimated May vehicle output at 190,000 units. The uncertainty as regards the Ford activity in May made accurate estimates difficult.

FORD UNITS REACH ACCORD IN TRADE PACT ON "BABY" CAR

London, June 8.—A reciprocal arrangement was announced last night between the British and Canadian Ford companies, the former of which supplies the United Kingdom and part of Europe, and the latter Canada and the remainder of the British Empire.

The new agreement provides that the "baby" Fords of eight horsepower, manufactured in the British plant at Dagenham, be distributed throughout the empire by the Canadian company and its subsidiaries. The big new eight-cylinder car manufactured at the Walkerville Ont., factory will be distributed by the British company.

COOK COUNTY SALES OFF SLIGHTLY FROM TOTAL FOR APRIL

Chicago, June 8.—May registrations of automobiles in Cook county totaled 4,301 against 4,708 in April of this year and against 8,061 in May, 1931. In the five months to May 31 registrations totaled 17,632 against 32,811 in the like period of last year.

The following table shows registrations by companies in May with comparisons with the previous month and a year ago:

	May, 1932	April, 1932
General Motors	1,685	2,175
Ford-Lincoln	646	369
Chrysler division	1,070	1,098
Studebaker division	222	268
Hudson-Essex	124	89
Willys Overl'd Knight	124	121
Nash	129	190
Auburn-Cord	41	85
Hupp	69	110
Packard	64	89
Marmon	3	4
Franklin	8	9
Reo	19	20
Graham	72	59
Miscellaneous	25	22
Total	4,301	4,708

General Motors Sales in May Show Slight Decline From April

New York, June 8.—A sharp recession from the high peak reached in April is shown in the sales reports for May released today by General Motors Corporation, the actual count for the month for all units being 63,500, as against 81,573 during April.

This decline is not unusual seasonally, for, as a rule, April marks the peak sales month of the entire industry. In addition, the April sales by units of the General Motors Corporation this year showed an increase of 67.3 per cent. over the total for March, which was considerably more than a seasonal gain. Special showings held during the early part of the month were credited for the sharp upturn in sales during April. Also the advent of the new Ford at that time decided a number of buyers who were waiting to see what the new Ford would be like.

For the industry as a whole there is still reason to believe that the May sales will exceed April, as predicted earlier in Automotive Daily News, in spite of the slight loss shown by General Motors. Ford has been forging slowly ahead and his sales during May should offset Motors' sales during May shows that reports additional gains during the month, although figures for the entire period are not yet available.

A detailed report of General

(Continued on Page 9)

INDIANAPOLIS SALES IMPROVE IN MAY

Indianapolis, Ind., June 8.—Improvement in the relative position of registrations of new cars in Marion county (Indianapolis) this year, compared with 1931. is noted in figures for May compiled by the Indianapolis Automobile Trade Association.

Not only did the May total show an increase in volume of 17½ per cent. over April of this year, but the percentage of last year's business showed a decided improvement compared with April, and evidence that the peak this year would fall later than at any time in history was an established fact with May's climb from April which previously marked the peak or followed the peak month of March.

April's ratio of new car sales this year against 1931 was exactly 1 to 2, while May showed a decline of only 30 per cent. from May of last year. Used car sales showed a similar trend although slightly fewer were registered in May than in April, with May showing 1,215 against 2,078 and April 1,288 against 2,293. Total used car sales for the five months were 6,379, as compared with 10,802 for the same period of 1931.

May new car sales amounted to 881, against 748 for April and 1,257 for May of last year.

N. Y. CITES LICENSE LAW VIOLATIONS

Albany, N. Y., June 8.—The Bureau of Motor Vehicles has found that in many cases automobile number plates issued when cars were registered have been transferred, when the originally registered vehicles were sold or disposed of, to other cars without registering the new cars, as required by the law of 1931, which says a registrant must remove the plates from the vehicle which has been sold. The law also provides as follows:

"Such seller or owner may, however, register another vehicle and use said number plates thereon, upon making application for such registration, paying a transfer fee of $1 and paying the excess, if any, of the fee for registering the first vehicle, both fees to be computed as of the date of registering the second vehicle."

Police agencies throughout the state will be requested by Charles A. Harnett, commissioner of motor vehicles, to check the registration of a car as well as the driving license of the operator. The registration certificate will indicate whether or not registration and plates attached to the car are in legal form.

SAN FRANCISCO MAY SALES JUST UNDER THE TOTAL FOR APRIL

San Francisco, Cal., June 8.—Passenger car sales in this city during May, 1932, totaled 798 units. This compares with 1,590 passenger cars sold in May, 1931. In April this year the sale of passenger vehicles totaled 840.

Truck sales in San Francisco this May were 61, as against 163 in the same month last year and 79 in April, 1931.

N. Y. TO OBSERVE SAFETY WEEK JUNE 13

Albany, N. Y., June 8.—The Bureau of Motor Vehicles will cooperate with various automobile clubs and civic organizations in the observance in this state of Accident Prevention Week. This campaign, which is expected to reduce the number of traffic deaths, will take place June 13-18.

The state Automobile Association has been requested to interest its constituent organizations in the safety movement, and the individual clubs will be asked to enlist the aid of local bodies which are endeavoring to solve the traffic accident problem.

Municipalities of the state, where possible, may lend their support by sponsoring on special days a campaign of systematic inspection of the mechanical parts of all cars submitted for tests. Motorists, also, should give special attention to regulations and signals adopted for the safety of all who use the highways. The participation of children in Accident Prevention Week may be brought about by lessons which emphasize safe conduct on the street.

Get Into A. D. N's Letter Contest, Win $100—See Page 3

Interpreting the Latest Moves in Business

The following is a summary of an address presented today at the annual meeting of the National Automobile Chamber of Commerce at its headquarters, 366 Madison Ave., New York city, by Virgil Jordan, chief economist of McGraw-Hill Publications.

SINCE 1923 expenditures of individual consumers for all forms of transportation have been the third largest item in the living budget of the American people, exceeded only by outlay for food and housing and running ahead of expenditures for clothing. In 1929 such expenditures amounted to 13.8 billion dollars and of this only about 1.8 billion dollars, or barely a seventh, were for forms of transportation not connected with the automobile.

This is probably the first time in the history of any nation when a people have spent more money as consumers for the pleasure and convenience of moving themselves about than they have for the things they wore, and spent it mainly on their own private means of transportation.

This is only one illustration of the fact that the automobile, or let us say the internal combustion engine, is the unique and incomparably the biggest contribution of the United States to modern civilization. The industry that has made this contribution possible is itself the most distinctive and characteristic development in our economic life. It not merely symbolizes the mechanical ingenuity and the aggressive organizing genius of American business as almost no other industry does but the basis upon which it has been established and the attitude and temperament of its leaders have emphasized from the outset the principle that the prosperity of business and of the nation rests upon the purchasing power of the consumer rather than the investing power of the saver, and that the standard of living of the man of the people is capable of indefinite expansion.

In the development of the automobile industry in this country in the past two-score years we have seen the repudiation of the old classical principle that prosperity depends upon the rich and of the gospel of save and slave upon which every other nation and every earlier society has proceeded.

This industry has been in a very deep sense the liberator of business from outworn economic dogmas. By virtue of its almost unique freedom from banking influence and from the burden of excessive fixed debt, as well as the freedom of mind, the flexibility of adaptation and creative initiative of its leaders, it still remains the strongest, soundest and most reassuring part of our business structure. Even though it cannot singlehanded pull us out of depression in this situation as it did in the past, we can say with assurance that no permanent and increasing prosperity will be possible in this country until other industries arise successively to play the part it has played, with the same economic philosophy, the same financial flexibility, technical skill and creative confidence.

The American people at this moment and for the past three years, along with the most of the business and banking community have allowed themselves to be stampeded into a shameful retreat from one of the most promising and hopeful adventures in the history of humanity. In this retreat, like a routed army, they have abandoned or repudiated most of the economic principles of progress which they had painfully won or toward which they were blindly groping during that much maligned new era of prosperity preceding 1929. Their leaders, blinder than themselves, have betrayed them into this abject surrender to despair and defeatism after having marched them, like the King of France, up the hill and given them a glimpse of the promised land and marched them down again.

I cannot pretend to see any immediate hope of wiser leadership, but I believe that the American people are wiser than their leaders ever are, and that the underlying drift of events alone will lead them out of the blind alley into which they have blundered. We may have another year or more of difficulty, distress and disorder, domestic and international, but I am confident that we shall recover from the stupidities of policy that rule us now and reject the counsels of the castor-oil school of economics that are cramping us today. More and more members of the business community, and not a few bankers as well, who are inevitably the natural leaders in American life, are coming to realize that this road of deflation, debt liquidation, reduced standards of public and private living into which we have been led is the wrong road, a one-way street that runs irresistibly to the wreckage and ruin of bankruptcy, debt repudiation or default, universal distress, destitution, civic disorder, political upheaval, revolution and destruction of our economic order.

They understand that, despite the errors, excesses and follies of the pre-depression period there was nothing in our business structure and industrial organization which was so essentially unsound as to prevent its survival and that there was nothing inherently impossible in the principle of a progressively rising standard of living for the mass of the American people.

They realize also that in our modern economic system there can be

(Continued on Page 9)

Classified Advertising

Classified Rates 5c Per Word

FOR SALE

USED TRUCK, TRAILER, VAN AND BUS PRICES SLASHED!
Many jobs practically new. Most equipped with cabs and bodies; all types. Will sell bodies or cabs only if desired. Buy direct and save plenty.
There are wonderful values here. We also solicit Fleet Owner parts business, our prices are right.
Gramm Motors, Inc. Delphos, O.

BALTIMORE DEALERS TO MEET JULY 18-19

Baltimore, Md., June 8.—The Automobile Trade Association of Maryland will hold its annual convention July 18 and 19 at Ocean City, Md., it was announced here today by John E. Raine, general manager of the association, following a meeting of the board of governors at which the convention site was selected. Atlantic City, N. J., had been under consideration.

Several hundred automobile distributors, dealers, salesmen and jobbers' representatives are expected to attend the convention at the Maryland resort. It will be the third annual convention of the association and special efforts will be made to obtain speakers of the highest caliber, according to Mr. Raine.

PRODUCTION ROSE 3,000 FOR WEEK ENDED JUNE 4

New York, June 8.—According to Stein, Alstrin & Co., automobile production during the week ended June 4 rose to 50,443 units, against 47,127 the week previous, with the Ford Motor Company leading the way with an increase from 16,800 the previous week to approximately 21,000 in the period mentioned.

According to this brokerage house Chevrolet held production at about the same level as in the previous week. Most of the other manufacturers tapered off slightly or held to the previous level.

ROCKNE REPORTS MAY SALES ABOVE TOTAL FOR APRIL

Detroit, June 8.—A gain of 32.7 per cent. in Rockne retail deliveries by dealers for May over April was announced today by George M. Graham, vice-president of Rockne Motors Corporation. This is a further gain over the 105 per cent. increase in Rockne registrations for April over March, Graham said.

"The May figures were compiled from our regular ten-day reports from dealers," Graham said, "and they show an upward trend for every ten-day period. For example, every period in each of the two months showed a substantial gain over the previous period, as well as over the corresponding periods for the previous months.

"Deliveries reported in the last ten days of May were especially impressive, showing a gain of 42.3 per cent. over deliveries in the corresponding period in April.

"The fact that the last ten days in May also showed a gain of 25.1 per cent. over the previous ten-day period in May," Graham added, "is one of our most encouraging symptoms of returning prosperity."

Another interesting comparison showed that deliveries in twenty-two key points throughout the country had made steady gains during the three May ten-day periods. The second period registered a 7.9 per cent. increase over the first, while the third showed a further gain of 20.9 per cent. over the second May period.

FINANCIAL NEWS

MACK TRUCKS

New York, June 8.—Directors of Mack Trucks, Inc., yesterday declared a dividend of 25 cents a share, the same as was paid in the two preceding quarters, although the company stated it is making no money at the present time. The directors said that with cash and United States government securities of $8,000,000 and net current assets of $30,000,000, it was deemed "unjust to stockholders not to make this modest distribution."

STUTZ MOTOR

Indianapois, June 8.—Stutz Motor Car Company of America reports for the year ended October 31, 1931, a net loss of $296,270, after depreciation, losses from branch operations and other deductions. This compares with a net loss of $1,161.666 in the preceding year.

Consolidated balance sheet as of October 31, 1931, shows total assets of $2,037,683, against $1,815,397 on October 31, 1930, and profit and loss surplus of $921,863, against profit and loss deficit of $971,997.

Current assets, including $269,846 of cash, amounted to $668,818, and current liabilities were $185,518. This compares with cash of $96,796, current assets of $380,304 and current liabilities of $225,781 at the close of the preceding year.

GABRIEL COMPANY

Cleveland, O., June 8.—Gabriel Company reports for the quarter ended March 31 net loss of $13,446 after interest, depreciation and taxes, compared with net profit of $8,201, equal to 4 cents a share on 200,000 shares of combined Class A and B stocks in the first quarter of the preceding year.

NATIONAL LOCK

New York, June 8.—National Lock Company year ended December 31: Net loss after expenses, interest and other charges, $29,240, against $153,-022 deficit in 1930.

YOUNGSTOWN SHEET & TUBE

Youngstown, June 8.—Youngstown Sheet & Tube Company has omitted the quarterly dividend of $1.37½ on the preferred stock due at this time.

U. S. GAUGE

New York, June 8.—United States Gauge declared a semi-annual dividend of $1.25 a share on the $50 par value common stock, payable July 1 to stock of record June 20. This is a reduction from the $2.50 previously paid.

(Continued on Page 11)

SPARKS from DETROIT

S. A. E. Vanguard
* * *
Bill Stout's Job
* * *
Peed's Pulpit
* * *
Never Too Old
* * *
Rudy Rosain
* * *
New Blood
* * *

Chris Sinsabaugh—Detroit Editor

NUMERICALLY about half the size of last year, Detroit's delegation to the annual summer meeting of the Society of Automotive Engineers at White Sulphur Springs next week is set to push off for the big affair. While the majority will go on the special train leaving here at 6 p. m. Saturday, others will drive. When they all check in the total will be around fifty.

Already listed are many of the leaders in engineering activities in this area, the bookings including H. W. Alden of Timken-Detroit, a former president of the S. A. E.; Martin Pulcher, president of Federal Truck; H. T. Woolson, chief engineer of the Chrysler Corporation; A. A. Bull, president of Hamby Governor; Frank Walls, chief engineer of Hupmobile; S. W. Marschner, western manager of New Departure; L. P. Kalb, chief engineer of Continental Motors; James T. Kennedy, Detroit manufacturers' representative of B. F. Goodrich; Arthur Boor, executive engineer of Willys-Overland, and, of course, William B. Stout of Stout Laboratories.

* * *

BEING BILL STOUT'S godfather, so far as the automobile industry is concerned, I cannot resist bragging that this great aviation authority has been selected to deliver one of the most important papers at this S. A. E. meeting. Bill's been flying high since he went into aviation, but this time he is going back to his old love and will tell his colleagues "What Motor Cars Should Be." Knowing what a free thinker on the subject the old bird is, I feel the engineers are going to get an earful of what they may think are revolutionary ideas, but which will turn out in the end to be darned practical. You'll be wondering why you didn't think of them yourself.

* * *

PEED'S PULPIT is something I have been hearing about for some time, but not until the other day did I discover what it is. You know the general sales manager of De Soto delivers many speeches in his travels through the territory, so he has perfected a folding small desk which he carries around with him. It is a small affair which is assembled on the speaker's table. On it are Peed's notes, and he stands up there just like a preacher in a pulpit and expounds his theories on salesmanship.

* * *

CHEVROLET headquarters here have a story of the sale of a car at Knoxville, Tenn., that fairly throbs with human interest. Imagine being 87 years old and going out and buying your first car! Yet that is what R. M. Petty, who fought with the Ninth Tennessee Cavalry in the Civil War, and who was wounded twice, did. And then, too, he never had driven a car.

The veteran and his 88-year-old wife, in the deep twilight of their long lives, got the wanderlust. With a family of twelve children, fifty grandchildren and seventy great-grandchildren scattered to the four winds, the old couple bought the Chevrolet from Spiers to go traveling and calling on their descendants. They will go to Texas first and then to California.

* * *

BACK IN 1907 our Motor Age office was next door to the Chicago Motor Car Company, selling Packards under the guidance of Fred Pardee. A new stockroom boy was needed, and Pardee advertised. Of the thirty-eight applicants, Rudy Rosain got the job at $4.50 a week. He has been there ever since, and the other day the branch gave the manager of the accessory department, none other than this same Rosain, who also handles parts and purchasing, a formal banquet at which his twenty-fifth anniversary on the Packard job was fittingly celebrated.

* * *

IT IS A COMMENTARY on the rapid turnover in the automobile industry to mention that at the funeral of Hugh Chalmers, in his day one of the greatest figures in the business, none of what you might call the present generation, the executives who have come up in the last decade, was at the bier.

However, the old guard was there—Alvan Macauley, president of Packard and president of the N. A. C. C.; W. J. McAneeny, president of Hudson; J. E. Fields, president of Chrysler Sales; Fred Zeder, Chrysler engineering vice-president; C. A. Pfeffer, former treasurer of the Chalmers Company; Percy Owen, a former Chalmers executive; James Levy of Chicago, once a leading Chalmers dealer and now selling Buicks, and H. T. Ewald, Lee Anderson, C. C. Winningham and Walter Zimmer, all heads of advertising agencies in Detroit.

Retail Salesmen—This Is Your Page

This department is devoted to the interests of the retail sales division of the industry. Salesmen, this is your department. Automotive Daily News wants you to get something from this department that will help you in your work on the firing line. It wants you to pass on your own experiences, successes, failures to help your brother salesmen. Send in your story in the form of a letter, or even a postal card, and let us get it ready for publication. Your achievement or your mistake may help another salesman to make sales or avoid errors that cost you commissions.

Dealers read this page. Give us the benefit of your reactions on these problems that affect the work of your salesmen, the men on the firing line, the men who bring home the bacon or don't.

AFTER THE SALE WHAT?

In the old days when selling automobiles was looked upon as "a game," the salesman was not much more than an order taker. The number of people who wanted cars was frequently greater than the number of cars available, especially in the popular makes. The salesman expected from day to day a fresh stock of customers. He was so busy taking orders that he didn't look very far ahead. He didn't consider that he was in a sense building up a business for himself with a clientele of satisfied customers who would buy from him year after year.

No salesman today has to be told that conditions now are different. He knows it from personal experience. But, nevertheless, something of this old attitude still hangs over the psychology of some automobile salesmen. Not all, by any means, but some of the fraternity, still have the attitude of "get new customers and keep on digging up fresh supplies of clients."

Every salesman today, if he is going to make a profession and success of selling automobiles, ought to feel that he is building up his own business. A clientele of customers who look to you whenever they want to purchase automotive transportation is a business of your own. Customers are the most important part of any business, and if you control a clientele of satisfied purchasers, that is your business.

This is the reason for the growing importance of after-sale activities. It is the duty of every salesman to follow up his customer after he has made a sale as it was to contact him when the deal was still hanging fire. The most important source of sales that any salesman has is his list of customers.

The salesman today who sells a car should make a small ceremony of it. He should present his client to the dealer. He should take him into the service department and introduce him to the service manager and ask that he be taken care of in the most efficient possible way. By every means the salesman should make delivery of the car himself, unless the customer drives it away himself. He should go over the guaranty policy of his manufacturer and explain to his client just what he is entitled to in free service and adjustment. If there is anything needing explanation in regard to the controls or the handling of the particular car being sold he should make sure that his client understands all about matters.

After the sale is a week or so old, the salesman should contact his new owner to find out if everything is going all right. If there is any cause of complaint or any doubt about it, the salesman personally should go to see his client and make sure that everything is straightened out.

Another excellent gesture is to call the client up once a week during the first month of his ownership and see if the car is performing up to expectations.

The salesman must remember that each of these clients who have bought cars with his help are part of his stock in trade. If he keeps them all satisfied and convinced that they did a wise thing in buying his car, he has the most valuable kind of boosters.

And that brings us to the first concrete benefit of cultivating one's customers after the sale has been made. Almost every man who buys a car has friends who have bought or are buying or will buy cars. It is human nature to like to appear to your friends as having been a smart fellow. The man owning a Blank Eight, who has had good luck with it, likes to tell his friend, who has a Blink Six, just what a swell car his own vehicle is. It gives a little kick of superiority. Granted then that your customer is satisfied and that you have shown an interest in him and in his ownership of the car, he will be only too glad to give you hints as to friends who have other cars, which they could profitably turn in on new models.

Many successful salesmen make these personal tips from their owners the most prolific source of live prospect leads.

Not many months ago a manufacturer was cleaning out a line in preparation for a new model. One of the salesmen had built up a clientele which he made a point of contacting from time to time to see that everything was going satisfactorily. In the clean-up a considerable reduction was being offered in the model about to be superseded. This salesman called up all his owners whose cars were two years or more old and told them of the bargain he was able to offer, and he made ten sales, most of them to owners who had not had any intention of buying at that time.

The point to be impressed on the salesman is that no other asset which he has can equal a satisfied clientele, which knows him favorably and relies on his judgment because of previous satisfactory dealings.

A. D. N. Offers Dealers $100 for Letter

This Newspaper Will Pay $100 for Best Letter of Month, $5 for Best Letter Each Day. Read Offer Below

In spite of the abnormally hard conditions existing in 1932, some dealers in this country are doing an excellent job. Some of them actually are exceeding the business done last year, though general automobile sales are running 50 per cent. behind the levels of 1931.

There must be a reason behind the success that these dealers are having in a year of grinding depression. Automotive Daily News wants to present the stories of why and how these successful dealers have done the job. It is, therefore, inaugurating a PRIZE CONTEST of comprehensive appeal. Read the rules of this contest and send in your entry.

Automotive Daily News offers a monthly prize of $100 for the best letter from any dealer who is exceeding in 1932 the business he did in 1931. The letter must tell how the dealer has managed to achieve his success so far this year. At the end of the month our check for $100 will be forwarded to the dealer whose letter has been adjudged the best one received.

Furthermore, Automotive Daily News will publish every day the best letter received that day and will pay the dealer writing it $5.

Get busy, you dealers who are grabbing success out of depression. Pass on your recipe to your fellows and make money out of doing it.

This Salesman Tells His Best Prospects

Managers of chain grocery stores and small meat markets are good prospects in the low-priced passenger car field, and should be contacted frequently, according to Frank Resel, salesman for the Stewart Motor Company, Willys, Willys-Knight and Hupmobile dealership of 479 Fairfield Ave., Bridgeport, Conn.

These men nearly always require a car for personal as well as business use, and the relative security of their positions, even in periods such as the present, is a factor which aids the automobile merchant, Mr. Resel pointed out. The average chain store manager is practically assured of his job, because of the neighborhood following he builds up over a period, and transfers or demotions are not likely to occur often.

Shrewd judging of the degree of persistence which may be applied to a given prospect is an important factor in automobile salesmanship, Mr. Resel said. A policy of "keeping everlastingly after" a prospect may result disastrously for the salesman if the prospect becomes annoyed by the frequent contacts.

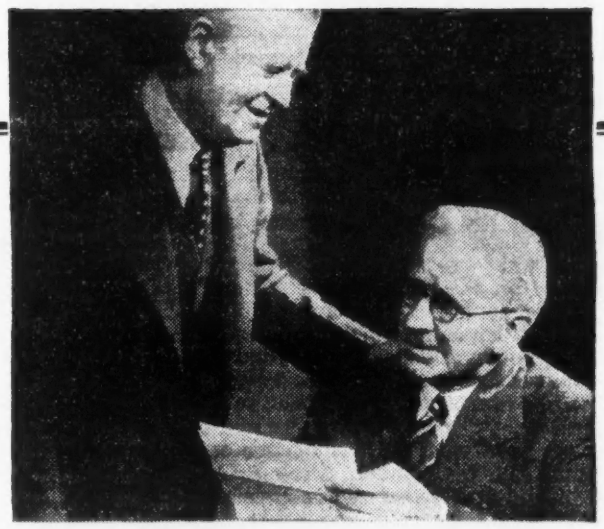
On the other hand, giving a prospect too much rope may enable a competitor to sign him up first. There is no hard and fast rule on this, Mr. Resel said, each prospect presenting an individual problem. Striking a happy medium in the matter of selling persistence is about the only solution.

Many car buyers do not want to be bothered during business hours, many giving explicit instructions to that effect. The evening hours are decidedly the best for interviews, Mr. Resel declared, most sales being closed during that time of the day.

Trying to sign a prospect too quickly may also prejudice him, the salesman pointed out. Some buyers resent the aggressive attitude in a salesman who figuratively or literally tries to shove a fountain pen into their hands. On the other hand, once the prospect agrees to a purchase, it is advisable to get the down payment and deliver the car with all possible speed, because of the danger of the customer changing his mind before delivery.

Meddlesome neighbors who inform a prospective buyer that they

(Continued on Page 10)



Why Not Turn to Nash?

Many dealers are turning to Nash as the industry's most conspicuous champion of stabilized sales policy.

That policy, based squarely upon the often repeated statements of C. W. Nash that dealers must be considered and dealt with as business associates, not as "sales outlets," has not changed in its fundamentals since the inception of The Nash Motors Company 16 years ago.

Furthermore, dealers are coming to Nash today because they realize that the five new groups of Nash cars, covering five price markets, are outstanding in their sales appeal.

The five new Nash groups are extremely salable cars because:—

1st —They provide the prospect with remarkable *size*—plus *quality*—at low cost;

2nd—They are priced from $777 to $2055, blanketing a field ordinarily covered by more than one franchise;

3rd—They offer more quality features;

4th —They are remarkably advanced in engineering;

5th —They are exceptionally beautiful and modern in body design;

6th —They *demonstrate* the greatest performance ever built into cars at comparable prices.

For information about the Nash franchise, write the Sales Manager, The Nash Motors Company, Kenosha, Wisconsin.

NASH

$777 to $2055

f. o. b. factory

(4242)

BIG SIX *116-inch Wheelbase* **STANDARD EIGHT** *121-inch Wheelbase*

SPECIAL EIGHT *128-inch Wheelbase* **ADVANCED EIGHT** *133-inch Wheelbase* **AMBASSADOR EIGHT** *142-inch Wheelbase*

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

Published Every Day Except Sunday and Monday by
AUTOMOTIVE DAILY NEWS PUBLISHING CORPORATION
350 Hudson St., New York, N. Y.
O. J. Elder, President. H. A. Tarantous, Vice-President. Alexander Johnston, Secretary
Entered as second-class matter August 27, 1925, at the post office at New York, N. Y., under the Act of March 3, 1879.
350 Hudson St., New York, N. Y. Telephone CA nal 6-1000

MEMBER A. B. C.
Mail subscriptions to CIRCULATION DEPARTMENT 1926 Broadway.
Telephone TR afalgar 7-4500
Subscription Rates. One year, $12.00; two years, $20.00 for United States and Canada also Mexico, Cuba and Panama
To Other Countries, One Year, $15.00; two years, $26.00. Single copies 5 cents.

THURSDAY, JUNE 9, 1932

ADVERTISING AND BUSINESS HEADQUARTERS
Harry A. Tarantous, Business Manager, 350 Hudson St., New York, N. Y. George M. Slocum, Manager Detroit Bureau, 427 Fisher Building, Detroit, Mich., phone Trinity 2-3500. Willard R. Cotton, Western Manager, 333 North Michigan Ave., Chicago, Ill., phone Andover 2400. Metz B. Hayes, New England Manager, Little Building, Boston, Mass. Blanchard, Nichols & Coleman, American National Bank Building, San Francisco, Cal.; Lincoln Building, Los Angeles, Cal.; 1037 Henry Building, Seattle, Wash.
Address ALL Advertising and business correspondence to 350 Hudson St., New York city

EDITORIAL DEPARTMENT
350 Hudson St., New York, N. Y. Telephone CA nal 6-1000.
Alexander Johnston, Editor. William C. Callahan, News Editor
Statistical Department (registrations and specifications), P. J. Robas, statistician. Engineering Department, A. Benson Carleton, technical editor. Merchandising Department, Charles S. Zack, editor. Art Department, John Bauerfeld, director.
Detroit Bureau, Chris Sinsabaugh, editor, 427-8 Fisher Building, Detroit, Mich. Telephone Trinity 2-3500. Contributing editor, John C. Wetmore.

Go and Get It

DR. PAUL H. NYSTROM of Columbia University, well-known expert on marketing development, recently offered a contribution to the cause of business betterment. Dr. Nystrom's suggestion is so simple, so barren of involved scientific red tape, that it may not be palatable to our army of reconstructionists, but to others its very simplicity will be appealing.

Dr. Nystrom remarked: "Business will get better when business men go out and make it better." Unless we mistake the import of this advice, it is simply a plea for business men to go out and fight for business in the way the old-time "drummer" used to do.

Perhaps the years of easy sales have softened up our breed. Perhaps we do not relish the primitive method of hopping rattlers and charging from one tank town to another and digging up orders in the face of sales resistance. The old-time drummer used to do just that. He scoured the tanks and the tall timbers, and he did not turn up his nose at small orders.

In our own industry, whatever mistakes we may have made, there is no tendency on the part of sales executives to sit at desks and wait for something to happen. One of the phenomena that every caller at automotive plants finds these days, is empty desks and executives on the road fighting for business. We do not believe there ever before has been a period when factory executives have spent so much time traveling. "Go and get it," seems to be the motto of automotive officials today, and we believe that this is the only way to bring about business betterment. Reconstruction commissions, balanced budgets and what not may help, but the real betterment must come through the men who go out and refuse to come back without business.

Bread and Butter Business

IN the book publishing business it has long been an axiom that books for children are "bread and butter business." These volumes do not have, as a general rule, huge sales, but they do continue selling year after year, whereas the novel, no matter how popular, usually passes as a money maker after a few weeks or months. We know of authors who have written a series of juveniles, who are today in receipt of steady incomes from these, year after year. No wonder the publishers call them bread and butter books. And, of course, all this does not dampen the publisher's hope that he is going to put out a best selling novel that will make him a fortune.

We wonder whether automobile dealers are not overlooking "bread and butter business" in favor of trying to make a killing in other directions.

We would not suggest in any way that automobile dealers shouldn't sell cars. That is their prime function; it is the backbone of their business and never should be neglected. But the sale of new cars opens the way for by-product activity, bread and butter business that will carry any energetic dealer over such a difficult period as the present is.

We believe that all too many dealers are letting a great chance get away from them when they calmly permit the one-stop station to annex the gasoline, lubrication and adjustment business. It is not only that a profit can be made in selling fuel and oil and making adjustments, but this sort of thing brings in other business with it. It may result in overhaul jobs, in the sale of accessories and equipment, battery charging and what not.

Automotive Daily News many times in the past has urged its dealers to become in fact what they are in name, automotive merchants. The merchant who sells new cars has the inside track to get and keep the after-sale business, which should supply the bread and butter business of his dealership. There is an even greater need today for every dealer to corral every form of automotive service and make every branch of his business yield its share of profit.

SERVICE COMMITTEE RECOMMENDS FIVE CHANGES IN FIELD

(Continued from Page 1)

together with other allied divisions, are obtaining the cream of the profitable business. This outside group avoids the responsibility of shouldering the overhead expenses necessary to render a complete service for the normal life of a vehicle at the lowest cost per mile.

"These groups are competitors of concerns engaged in the complete business of maintaining vehicles. The maintenance industry must develop into an industry in itself and as an integral part of the official family. A collective movement of the vehicle manufacturers will result in the adoption of policies that will govern an effective trade movement, reduce operating costs of vehicles and regain customer contacts and confidence.

"What service needs is a Walter Chrysler, a Henry Ford or a General Motors operation applied to maintain vehicles as an official trade movement.

"There are five important factors in developing such a plant:

"1. Control of policies through strong association channels. Cooperation of the factory service managers and our local association.

"2. Zoning of territories with control of official standarized maintenance depots.

"3. Establishment of a modern parts terminal making available genuine parts for all makes and models.

"4. Centralization of an industry controlled salvage yard.

"5. Establishment of a central repair factory for unit and major repairs operated as a wholesale trade movement.

"This committee has completed preliminary plans and has made a survey within a hundred miles of metropolitan New York. Detailed reports are finished and will be mailed upon request. We feel that these changes are of vital importance in clearing up trade conditions and establishing maintenance on a sound commercial basis."

SHEET METAL FORMER

The Engineering and Research Corporation is placing on the market a sheet metal former designed for doing all types of flanging. The device embodies a short brake, three to four inches long, oscillating about 260 times a minute. The angle through which it oscillates is regulated by a tread varying from 1 to 100 degrees.

Metal to be worked is fed through a holding down tool which clamps the metal during the up or working stroke of the brake and releases it during the down stroke to permit the metal to be shifted to another position. The holding down tool forms the backing against which the metal is pressed in its final position. The radius at the inside point of the hold down determines the inside radius of the flange. The arc segment extends from the hold down through the brake and is a guide against which the metal is held. Its radius determines the height of the flange. A different holding down tool must be used for each different height of flange and a separate brake tool is used for each hold down.

This machine has ten sets of holding down tools as standard equipment, permitting formation of flanges from one quarter to one inch.

The brake and holding down tools may be changed quickly and easily. The holding down unit is held in a jig which has vertical and horizontal adjustments to compensate for differences in metal thicknesses. A quick release raises over an inch so as to allow work flanged all around to be taken out of the machine. Speeds vary with the type of work, but it is claimed to average two to ten times as fast as hand hammering over a form. No form is needed, so that the machine is valuable in production up to 1,000 pieces or for experimental operations on a single piece. A templet is used to get the sheet outline. Rights and lefts are made from the same templet by feeding the two pieces through in opposite directions. The machine will take stock ranging from 0.12 to 0.083 of an inch.

In This Corner....

Opinions, suggestions, complaints, criticisms, grievances or what have you. Open to every one to say anything, anyhow, any time. The communications printed in this department represent the ideas and opinions of our readers. They are not necessarily ours. If you have something to say on any phase of automotive activity, wholesale, retail or abusive, let us hear from you and we will tell the world.

Protests Tire Makers Sales To Mail Order Houses

Automotive Daily News: We notice an item on the front page of June 2 issue, concerning the unfair practices which some tire manufacturers are undoubtedly dealing in when they furnish two large mail-order houses with tires, especially third-line tires, at a price that enables the mail-order houses to sell those tires in the local dealers' respective territories at a price less than the dealer can buy them at.

We know in our own mind that this is being done, and such practice is choking the very life and vitality out of the local dealers, who are attempting to operate a legitimate business and keep from one or two to a dozen or more employees in food and clothing and to pay taxes, insurance, etc., in his community, none of which the major tire companies are doing in many localities. We cannot help but believe that this is a very flagrant violation of the Clayton anti-trust law, and we are this date writing our senators and representatives to see if something can be done in this connection. We believe that it is an item that your Daily News can afford to give real publicity to, letting the dealers over this United States know that there is probably some recourse in remedy for this condition.

PORTER WILSON, Treas.-Mgr.
Hamp Williams Auto Company,
Hot Springs, Ark.

The following letter, addressed to Senators Hattie Caraway and Joe T. Robinson, and Representative D. D. Glover, was written by Mr. Wilson as a protest against the present method of handling tire sales:

"An article appeared in the Automotive Daily News, New York, June 2, headed 'Mail-Order Trade Causes Conflict in Tire Industry.'

"It goes into the matter of two or three of the largest tire manufactruers selling tires, especially third-line tires, to the mail-order houses at such an enormous discount over the prices charged to local dealers in the various sections of our country, that these tires cost these local dealers, who furnish local employment, pay local taxes, etc., equal or greater price than the mail-order houses retail them for in these various localities, thereby placing the local dealers in an utterly impossible competitive position in this situation. We know it is helping to starve out and bankrupt legitimate and honorable local dealers who should have some protection in this connection.

"We believe it entirely possible that the action on the part of these tire manufacturers in doing this is a direct violation of the Clayton Anti-Trust law, and we respectfully ask that our representatives in Congress will look into this situation as quickly as possible to find out if there is some relief."

COMING EVENTS

JUNE

8-11—**State College, Pa.** American Society of Mechanical Engineers, National Oil and Gas Meeting.
12-17—**White Sulphur Springs, W. Va.** Society of Automotive Engineers, summer meeting.
20-24—**Chicago, Ill.** Motor and Equipment Wholesalers Association, Edgewater Beach Hotel, summer conference.
20-24—**Atlantic City, N. J.** American Society for Testing Materials, annual meeting, Chalfonte-Haddon Hall.

JULY

3—**France.** Grand Prix Automobile Race.
5- 9—**Southampton, England.** Commercial Car Show.
9-10—**Belgium.** Grand Prix Automobile Race.
17—**Germany.** Grand Prix Automobile Race.
20-22—**Llandrindod, Wales.** Commercial Car Show.

OCTOBER

3- 7—**Washington, D. C.** National Safety Council, meeting.
3- 7—**Buffalo, N. Y.** National Metal Exposition, 174th Regiment Armory. W. H. Eisenman, 7016 Euclid Ave., Cleveland, director.
3- 7—**Buffalo, N. Y.** National Metal Congress. Sponsored by American Society for Steel Treating, with cooperation of American Society of Mechanical Engineers, Institute of Metals and Iron and Steel Divisions of American Institute of Mining and Metallurgical Engineers, American Welding Society, Wire Association.
13-22—**London, England.** Olympia Show.

Have you a message for Engineers?

Engineers and production men of the industry will gather at White Sulphur Springs, June 12 to 17, for the summer meeting of the S. A. E.

Each day *Automotive Daily News* will cover the meeting editorially. Copies will be mailed to all important engineers, production men and other factory officials in the industry in addition to those who attend the meeting.

Please send space reservations early. Forms close two days preceding publication.

Publication Dates—June 14, 15, 16, 17

Automotive Daily News

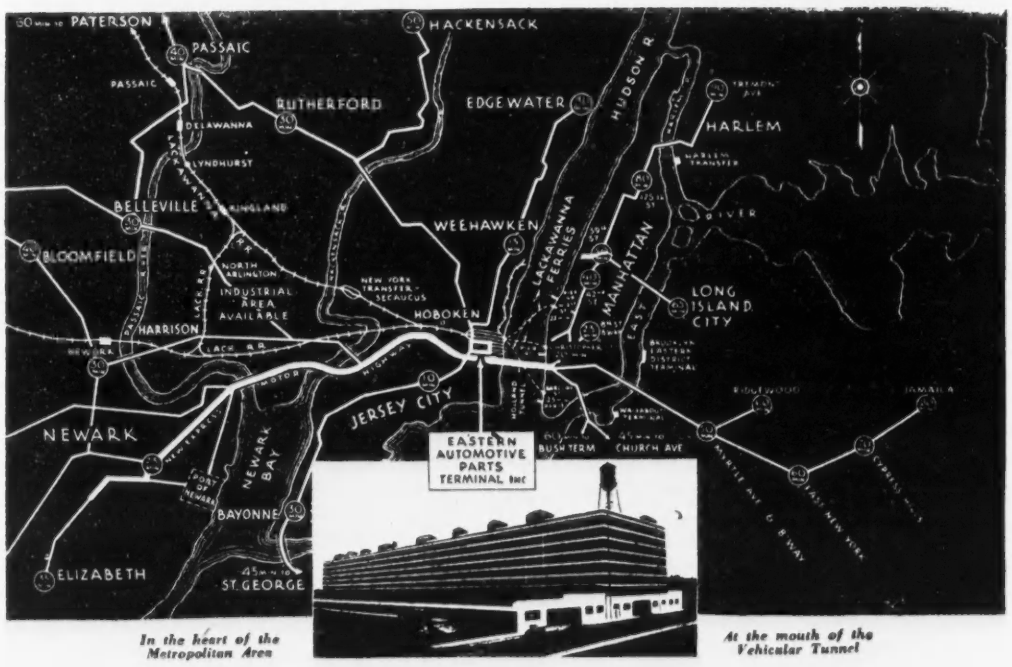
H. A. TARANTOUS, *Bus. Mgr.*, 350 HUDSON STREET, N. Y. C.
DETROIT OFFICE: Geo. M. Slocum, Manager
Fisher Building, Detroit, Mich.
WESTERN OFFICE: Willard R. Cotton, Manager
333 No. Michigan Ave., Chicago, Ill.

REDUCING the Cost of SHIPPING, WAREHOUSING & DISTRIBUTING Replacement Parts

A system comprising a modern warehouse, a fleet of motor trucks, personnel and all facilities for handling incoming and outgoing shipments of parts at a lower cost than the car manufacturer himself can do it.

THE PARTS TERMINAL PLAN OFFERS THE FOLLOWING ADVANTAGES:

1. A plan to assist in assembling into full carload shipments your parts at the factory intended for Eastern distribution.
2. A complete L. C. L. freight depot located within the terminal at the eastern end.
3. All rail shipments routed from the terminal to destination without carting charges.
4. A complete system of distribution. The entire Eastern territory is zoned and a fleet of 136 motor trucks operate on dependable daily schedules at a saving in cost to you of approximately 50% of express rates.
5. A new modern warehouse embracing 1,240,000 square feet of floor space.
6. A location within two blocks of the mouth of the vehicular tunnel connecting New Jersey with New York.
7. Unloading tracks accommodate 52 freight cars. There are 27 service elevators and loading platforms for 96 motor trucks.
8. A well trained organization that is in a position to materially reduce your shipping, warehousing and distribution costs of parts.



The Eastern Automotive Parts Terminal is advantageously located for *economic warehousing* and efficient distribution of products to the Metropolitan District—and the entire Eastern Territory.

EASTERN AUTOMOTIVE PARTS TERMINAL, INC.

Ralph C. Rognon, Pres.

ON THE LACKAWANNA RAILROAD

629 GROVE STREET, JERSEY CITY, N. J. Phone, RE ctor 2-2345

Were These *America's Best Read Ad* for the Month of May?

Announcing a revolutionary new service *for advertisers and their agents*

An EVERY-WEEK count of the number of men and women seeing and reading EACH advertisement published in America's three biggest weekly magazines.

●

Watch for "Best Read Ads of the Week" reproduced in bulletins every week in Printers' Ink, Advertising Age, Automotive Daily News, Drug Trade News.

●

Each time YOU advertise in Liberty, Collier's or Saturday Evening Post, we count YOUR readers . . . if you appeared in May, we have your ratings . . . write for them.

●

Five thousand. Ten thousand. Twenty thousand.

Dollars.

For a single advertisement!

What happens to it?

In the interests of more resultful advertising, Liberty sponsors an ambitious plan to find out.

The Plan: *An actual count*—every week, week after week—*of the number of men and women seeing and reading every advertisement in America's three biggest weeklies*, Liberty, Collier's and Saturday Evening Post.

Watch for Bulletin of Results Each Week

The advertisements on this page are offered as the "Best Read Ads of the Week" for each week in May. They rated from 70 to 113 per cent higher in attention value than the average.

That's equivalent to 70 to 113 per cent more circulation without greater cost!

Variation in Advertisement Reader Interest by Magazines

Week of May 7th
The average advertising page in Liberty stopped
17% more persons than in 2nd weekly.
40% more persons than in 3rd weekly.

Week of May 14th
The average advertising page in Liberty stopped
23% more persons than in 2nd weekly.
52% more persons than in 3rd weekly.

Week of May 21st
The average advertising page in Liberty stopped
6% more persons than in 2nd weekly.
22% more persons than in 3rd weekly.

Week of May 28th
The average advertising page in Liberty stopped
12% more persons than in 2nd weekly.
71% more persons than in 3rd weekly.

Each week, hereafter, Liberty will publish a bulletin illustrating the "Best Read Ads" of the previous week (regardless of which weekly they appeared in); revealing the margin of advantage they enjoy. Watch for them. Study them. Consider, as the weeks go by, the characteristics represented by these winning advertisements.

Make the Big Weeklies Your Experimental Laboratories

Every time you publish an advertisement in Liberty, Collier's or Saturday Evening Post, a count will be taken of the number of men and women seeing and reading it.

At your request your ratings will be sent to you regularly as your ads appear.

This offers you an opportunity in addition to your *private* research, for comparing one type of appeal with another, styles of layout, kinds of illustration.

You may also check your own findings on the effectiveness of black-and-white compared to two color and four color; large space and small space; position; season; weather; and how much difference the different magazines make in getting your ads seen and read.

Individual research along these lines has shown the way for some companies to make their dollar reach *twice as many readers*. Such companies will welcome this service as an adjunct to their own investigations . . . offering the added advantage of comparing their own ratings with others made under identical conditions.

Agencies and Advertisers Invited to Send Observers

Several advertising agencies have expressed interest in learning more about the technique of the Gallup-type reader interest investigations. Such organizations are invited to send an authorized representative into the field to spend a week working with the Percival White, Inc., investigators. For advance schedules, address Percival White, Inc., 130 W. 42nd St., N. Y. C.

Important: This Checks Reader Interest Only; Not Ultimate Results

Like all research data, these figures must be used judiciously.

They check *one* thing: The number of men and women seeing and reading your advertising.

It is *possible* for a poorly read ad to *sell* so well to the few who read it that it pays its way.

It is also possible for a widely read ad to lack profitable selling punch.

One thing, however, all must agree on: an ad must be *seen* before it can *sell*.

The more persons that see it, the more potential sales power it has.

And when one considers that:

". . . while one out of three may be impressed by an ad, less than one out of fifteen may take the trouble to read it. . ." (Gallup) . . .

the burden of responsibility for profitable advertising may be recognized as resting heavily on advertising's ability to get *seen*.

Liberty

vertisements

Count Made by Percival White, Inc. Using Gallup Method

Using the Gallup method—now so popular with leading advertisers, agencies and research organizations—Percival White, Incorporated, Marketing Counselors, has entire charge of all field work and tabulation.

A mature staff of expert investigators, under Mr. White's personal supervision, is constantly in the field.

Each week they visit a different city.

Each week they make about a thousand calls, uncover about one hundred and fifty men and women who actually have read current issues of Liberty, Collier's or the Saturday Evening Post.

As each reader is found, he is conducted through his magazine page by page. Every single item — editorial as well as advertising —is checked for having been seen or read.

The magazines appear one week. They are checked the next week.

Results are air-mailed to New York and published the second week after the issues were read.

Percival White, Inc. Employs Gallup Method to Obtain Data

These week by week reader interest figures are being found by Percival White, Inc., with the methods initiated by 6 similar studies last summer by Dr. George Gallup (formerly Professor of Journalism and Advertising at Northwestern University, now with Young & Rubicam, Inc., Advertising Agents). Probably no more exhaustive authority than Mr. White could be found to put the Gallup method to the sharpest test. With a background as marketing consultant to such organizations as Aluminum Mfrs., Inc. (Aluminum Co. of America), Ford Motor Co., General Motors Corporation, Florence Stove Co.—as author of such standard economics texts as: "Market Analysis," "Forecasting, Planning and Budgeting in Business Management," "Business Management," "Advertising Research," "Scientific Marketing Management," "Marketing Practice" and others—Mr. White's association with these week by week reader interest studies is most significant.

Write for Your Reader Interest Rating Card

In order to make your study easier, we have prepared a "reader interest rating card" illustrated below. It provides a convenient form for entering the percentages of men and women seeing each of your advertisements as it appears — affording ready comparison of the results of your different ads.

One of these cards is filled out in our files for every advertiser in one or more of the three big weeklies. If you advertised in Liberty, Collier's or the Saturday Evening Post during May, one of these cards has already been made out for *you*. Merely drop us a note and it will be sent to you by return mail. Then as each of your subsequent advertisements appears, a new card containing your full record *up-to-date* automatically will be sent to you. Since this work is already being done, your request involves us in no extra expense, places you under no obligation.

Merely write: "Send me my Reader Interest Rating Card." Address Liberty Research Department, 420 Lexington Ave., N. Y.

Best Read Ads of Week of May 7th

These ads stopped 75 per cent more persons than did the average page ad this week.

Best Read Ads of Week of May 14th

These ads stopped 113 per cent more persons than did the average page ad this week.

Best Read Ads of Week of May 21st

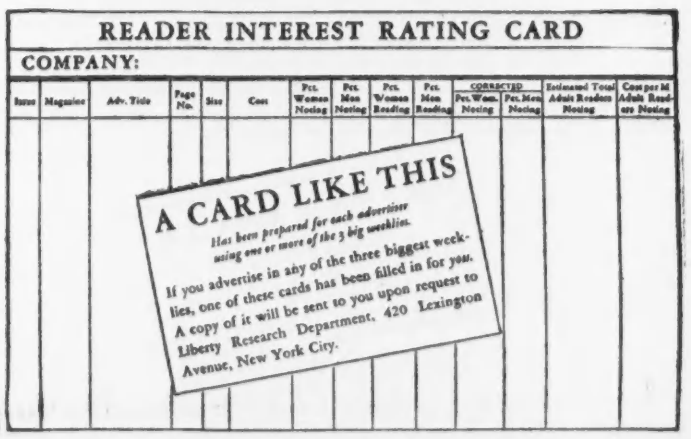
These ads stopped 75 per cent more persons than did the average page ad this week.

Best Read Ads of Week of May 28th

These ads stopped 70 per cent more persons than did the average page ad this week.

Watch next week in Automotive Daily News for our bulletin reproducing the "best read passenger car ads" of the week of June 4th

.... America's BEST READ Weekly


READER INTEREST RATING CARD

COMPANY:

Issue	Magazine	Adv. Title	Page No.	Size	Cost	Pct. Women Noting	Pct. Men Noting	Pct. Women Reading	Pct. Men Reading	CORRECTED Pct. Wom. Noting	CORRECTED Pct. Men Noting	Estimated Total Adult Readers Noting	Cost per M Adult Readers Noting

A CARD LIKE THIS

Has been prepared for each advertiser using one or more of the 3 big weeklies.

If you advertise in any of the three biggest weeklies, one of these cards has been filled in for you. A copy of it will be sent to you upon request to Liberty Research Department, 420 Lexington Avenue, New York City.

Production--Engineering--Factory

Gumming Characteristics Of Gasoline*

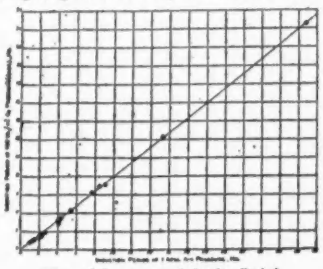
By OSCAR C. BRIDGEMAN
Bureau of Standards

*A paper presented at mid-year meeting of American Petroleum Institute.

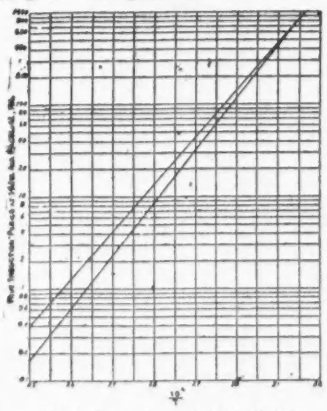
(SECOND INSTALLMENT)

Gasolines are frequently stored over periods ranging from six months to two years; and, if the gasoline is to be satisfactory as a motor fuel at the end of that period, its gum content must not have become greater than the permissible value for satisfactory engine performance. Obviously, it is important to be able to predict in advance how much gum will be present at the end of the storage period.

The problem of predicting how long a gasoline may be stored without excessive gum formation is difficult; for not only is the gum stability a function of the particular gasoline under consideration, but it is also dependent upon the conditions of storage. Furthermore, in order to verify the significance of any test method, a comparison should be made with the results of storage tests. Experiments made by various investigators have indicated that gum formation may be closely related to oxidation processes occurring in the gasoline; and, hence, suggest that the susceptibility to oxidation may parallel the rapidity of gum formation.



Effect of Pressure on Induction Period.
FIG. 4

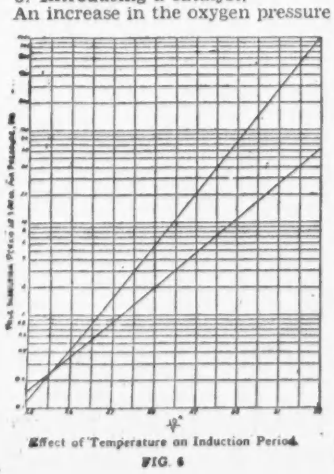


Effect of Temperature on Induction Period.
FIG. 5

Since the oxidation of gasoline by gaseous oxygen is very slow at ordinary atmospheric temperatures and pressures, it is necessary to find some means of accelerating the action in order to obtain a practical test method. Three means are available.

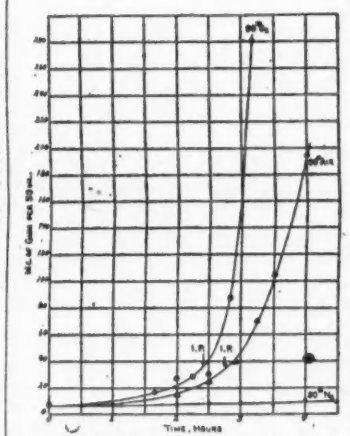
1. Increasing the oxygen pressure.
2. Increasing the temperature during the oxidation process.
3. Introducing a catalyst.

An increase in the oxygen pressure alone will not, in general, accelerate the reaction sufficiently to permit a test to be conducted in a reasonable period of time; so that, in addition, it is desirable to increase the temperature or to introduce a catalyst. Whereas changes in oxygen pressure alone will not ordinarily change the character of the total oxidation process, increase in temperature or the presence of catalytic agents may exert more effect on certain reactions than on others, thereby making the character of the total oxidation process different from that which occurs during storage. Therefore, it would be necessary to evaluate the effect of either temperature or catalyst and make a correction to a non-catalyzed reaction at ordinary storage temperatures.



Effect of Temperature on Induction Period.
FIG. 6

In evaluating the effect of temperature, it is possible to follow the usual method of making measurements at various elevated temperatures and extrapolating to the desired lower temperature. The evaluation of the effect of catalytic agents, is, however, not so simple; for, ordinarily, only an extremely small amount of catalyst is necessary and, in general, it is not possible to make measurements with various amounts of a catalytic agent and extrapolate to a non-catalyzed state. Accordingly, temperature was chosen as the means of accelerating the oxidation reaction. The apparatus and procedure employed in the present work have been previously described, and reference should be made to this paper for a detailed description.



Increase in Gum Content on Heating at 100 Deg. C.
FIG. 7

The effect of oxygen pressure was determined by making accelerated oxidation experiments using various oxygen pressures in the bombs and noting the induction periods. As referred to in this paper, the "observed induction period" is the interval between the time of introduction of the bomb into the oxidation bath and the time at which the pressure commenced to drop. The "oxygen pressure" is the filling pressure at 0 deg. C., which was the temperature used for filling the bombs. It was found in all cases that a plot of induction period against oxygen pressure gave a straight line. A comparison of all of the data obtained indicated that the ratio of the induction period at 100 lb. per sq. in. oxygen gauge pressure to the induction period corresponding to 1 atmosphere absolute air pressure (3 lb. per. sq. in. absolute oxygen pressure) was independent of both the temeprature and the particular gasoline employed. This is illustrated in Fig. 4, where all of the induction period data at 100 lb. per sq. in. oxygen pressure are plotted against the values at 1 atmosphere air pressure. The equation of the line through the points is:

$$I_{1\ \text{atmosphere}} = 1.25\ I_{100} \qquad (2)$$

where I is used as a symbol for induction period expressed in hours. Since the induction period of interest as regards storage is that corresponding to 1 atmosphere air pressure, all of the observed induction periods throughout this paper were computed to 1 atmosphere air values by means of equation (2).

Preliminary to a study of the effect of temperature on induction period, measurements were made of the time required after introduction into the bath for the gasoline in the bombs to heat from the filling temperature (0 deg. C.) to the temperature of the experiment. Since the change in induction period with temperature is large, it is evident that the observed induction period is longer than the true isothermal induction period at the bath temperature. Time-temperature curves were obtained on a number of gasolines during the time of heating to various bath temperatures, and it was found that the observed induction period was longer than the true isothermal induction period by 0.8 hour, regardless of bath temperature over the range from 120 deg. to 60 deg. C. Accordingly, 0.8 hour was subtracted from all observed induction periods.

Data were obtained on 12 gasolines at 10 deg. C. intervals over a temperature range of 30 deg. or 40 deg. C. in each case, and it was found that the data on each gasoline could be reproduced by an equation of the form:

$$\log I_0 = A + \frac{B}{T} \qquad (3)$$

where I_0 is the true induction period in hours at 1 atmosphere air pressure, T is the bath temperature in absolute degrees, and A and B are constants characteristic of each gasoline. By means of this equa-

(Continued on Page 10)

TABLE 3
Gum Content Values in Liquid Bath-Temperature Series

Bath Liquid	Gasoline Number	Observed Gum Contents, Milligrams of Gum Per 50 Ml.		Smoothed Gum Contents, Milligrams of Gum Per 50 Ml.	Observed Minus Delta Smoothed		Ratio
Tetralin	7	3.0	3.1	3.4	—0.4	—0.3	0.11
	8	5.8	4.9	5.8	0.0	0.9	0.19
	9	14.6	15.8	13.8	0.8	2.0	0.45
	10	17.9	17.1	20.5	—2.6	—3.4	0.67
	11	22.2	21.5	24.5	—2.3	—3.0	0.80
	12	31.3	33.0	30.6	1.3	2.4	1.00
Amyl acetate.	7	3.7	4.1	4.1	—0.4	0.0	
	8	7.4	6.6	7.0	0.4	—0.4	
	9	16.7	18.2	16.6	0.1	1.4	
	10	26.9	25.3	24.7	2.2	0.6	
	11	30.2	31.8	29.5	0.7	2.3	
	12	36.5	36.9	36.9	—1.4	0.0	
Water	7	6.3	5.9	5.4	0.9	0.5	
	8	11.8	10.4	9.3	2.5	1.1	
	9	20.2	21.4	22.0	—1.8	—0.6	
	10	35.8	36.4	32.8	3.0	3.6	
	11	36.0	36.8	39.1	—3.1	—2.3	
	12	48.9	45.9	48.9	0.0	—3.0	
Methyl alcohol.	7	7.8	6.4	7.5	0.3	—1.1	
	8	13.3	13.3	13.0	0.3	0.3	
	9	29.4	27.9	30.9	—1.5	—3.0	
	10	44.7	43.4	46.0	—1.3	—2.6	
	11	53.9	59.9	55.0	—1.1	4.9	
	12	68.6	72.6	68.6	0.0	4.0	
Air-jet	7	6.5	6.9	6.7	—0.2	0.2	
	8	9.9	11.2	10.6	—0.7	0.6	
	9	22.7	25.4	24.0	—1.3	1.4	
	10	36.8	38.4	37.6	—0.8	0.8	
	11	46.5	47.7	47.1	—0.5	0.6	
	12	53.6	55.7	54.6	—1.0	1.1	

Average Delta=1.3 mg.

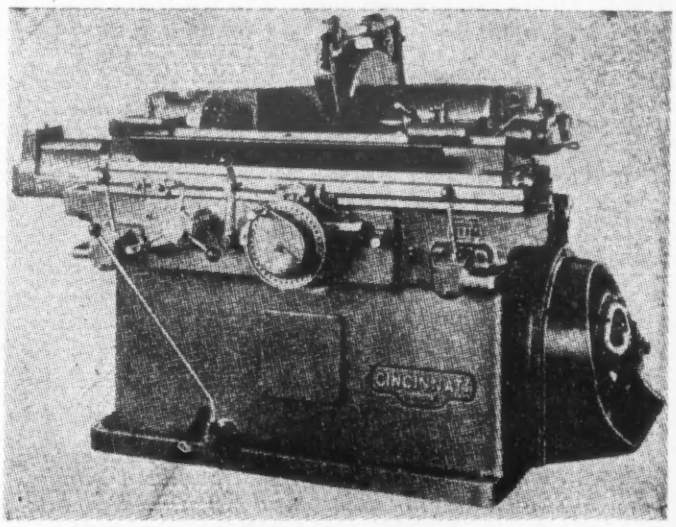
Issues New Book on Automotive Lubrication

The Aro Equipment Corporation announces the publication of a sixty-four page booklet entitled "The Evolution of Today's Most Profitable Automotive Service."

While the Aro Corporation manufactures lubricating equipment of every description, no attempt has been made to inject an advertising or merchandising appeal favoring the company's own products into the booklet. The booklet is simply an impartial survey and discussion of existing lubrication methods, means and possibilities. It aims to supply every one connected with the lubrication industry with essential facts, needed in conducting a lubrication business under existing conditions. Its primary emphasis is on the subject of merchandising automotive service. The booklet is written in clear, concise, non-technical language.

A copy of the booklet will be mailed without charge to any one interested in the subject of more profitable lubrication service.

Saddle Type Grinding Machine



The Cincinnati Grinders, Inc., has developed two new six and ten inch saddle type grinding machines with greater distances between centers, these latter having a ten inch swing and a ten horsepower motor for the grinding wheel. These machines also embody a long hand lever placed conveniently to the operator's left hand for starting and stopping the table traverse, workhead rotation and flow of cutter coolant.

The main drive ten horsepower motor mounting has a shoe-type bracket, permitting the use of standard motor with feet. This bracket is arranged so that the motor may be swiveled quickly out of position to permit new Texropes to be fitted to the drive. The headstock gearing is of the spiral type, the gears running in a bath of oil to give greater smoothness. The bed and saddle have been strengthened to reduce vibration. Grinding wheel lubrication has been improved over previous models to lessen the number of spindle adjustments that have to be made.

The manufacturers point to the following as outstanding features of these new models: Adequate power, reducing grinding time, convenience of control to reduce manipulation by the operator and the time needed in handling work; lower maintenance costs by reason of the high safety factor in the machines, particularly the grinding wheel and workhead spindle.

The 6-inch machines have 18 to 30 inches distance between centers and the 10-inch machnes have 16 to 36 inches between centers.

SAFETY METER

The Safety Meter made by the Stone Wheel & Rim Company is designed to provide convenient and accurate means of checking, with engineering precision, the wheels, brakes, axles, frame, steering, lights and signals of a motor car to determine their condition with respect to safety of operation.

The equipment consists of a brake testing device giving both dynamic and static brake tests and providing means of detecting distorted frames, untrue wheels, worn bearings, loose bolts, pins and bushings, a series of pivoted ball bearing surface boards for detecting improper alignment of wheels and means of testing the efficiency of lights and signals.

Between the brake tester and surface boards are two ball bearing, rotating, slideable disks with means of automatic adjustment to tread of car or position of wheels and means of determining definite angle of turning radius in checking alignment of wheels on turns without lifting the car or undue strain on steering gear.

With this combination of various devices into one unit for determining the roadability of a motor car or truck the owner sees at a glance any imperfection the meter discloses.

HAMMERING MACHINE

The Langelier Manufacturing Company has developed a special hammering machine designed for use in hammering the section at the end of automobile rear axle housings, to which is attached the spring perch.

This hammering operation is performed after the two pressed steel halves have been welded together and parts after the welding are oversize and out of round. Instead of turning an excess amount of metal here and thus decreasing the strength, the hammering decreases the diameter of the tube, increases the thickness of the walls and makes the tube round and to size within 0.002 of an inch.

The machine is designed on the swaging principle, and the main spindle, which is driven by the flywheel, carries six rolls, which strike a roll in the oscillating plunger that is made to receive the upper die. This spindle motor, driven by V-belts, rotates at 300 r. p. m., striking 1,800 blows per minute.

The lower die is operated by means of a toggle joint from a hydraulic cylinder by a variable delivery high-pressure pump that is driven by the motor. The rotating mechanism is equipped with an air-driven collet-type chuck and air tailstock, the drive being through a speed reducer belted to the flywheel. The floor space taken up by the machine is 105 by 72 inches. The weight is about four tons, and the overall height of the machine is 92 inches.

Safe Practices in Truck Fleet Operation Become Habitual by Repetition, Survey Discloses

Safe practices become habitual through repetition. To encourage repetition requires constant educational effort. A company may be sincere in its determination to prevent accidents, may maintain its equipment in perfect mechanical condition, may exercise extreme care in selecting drivers, yet experience a high accident rate if the education of drivers in safety is neglected.

Safety must be kept before the driver every day in an interesting and convincing manner. He must be made to appreciate street hazards and must be acquainted so thoroughly with driving under all conditions that he will instantly anticipate an impending collision and then act instinctively to avoid it. A number of educational methods have recently been developed and successfully employed among drivers for this purpose.

These programs have been found effective by leading truck fleet operators, according to a survey by safety engineers of the Policyholders Service Bureau, Metropolitan Life Insurance Company.

To keep drivers constantly keyed up to the necessary pitch of interest and alertness to enable them to prevent accidents requires much more effort than is necessary to promote safety in many industrial plants.

A large New York city department store found the blackboard display an excellent device for this purpose. The plan consists of placing upon a large, prominently located blackboard, short, straight-from-the-shoulder messages in various colored chalk and accompanied by simple designs.

To secure maximum results these messages and designs are changed frequently, usually twice a week. Any employee who is able to print or write legibly has little difficulty in drawing on the blackboard an attractive and interesting message. The preparation of copy and designs, however, is assigned to an employee experienced in advertising and familiar with street and highway safety.

This department store has found that the advantages of the blackboard over the usual safety poster are numerous. The cost of maintenance is trivial; the display is much larger than the poster, thereby compelling greater interest and the number of messages that can be used is limited only by the time required to prepare and reproduce them. The outstanding value of the blackboard, however, is that it does what no manager can find time to do. It addresses all drivers personally, every day, on the subject of safe driving. Matters of local and personal interest, achievements of driver and timely topics are used to supplement straight, instructive messages when desirable.

The following types of messages have been found to contain real appeal:

Causes of Traffic Accidents.
Serious Local Accidents.
Good Records of Other Companies.
Drivers Winning the Bonus.
Human Interest Appeal—Accidents to Mothers and Children.
Value of Life and Limb.
Pride in Safe Driving.
Local and National Accident Statistics.
Humorous Anecdotes.
Meritorious Acts of Drivers.
Current Local Events.
Seasonal Hazards.

Many companies take steps to remind the driver of safety each time he enters his machine. For this purpose, cards of bright colored stock, bearing a brief safety slogan are placed in a metal holder on the dashboard of the vehicle directly in front of the driver. If changed semi-weekly on the day following the display of a new blackboard message, four distinct messages can be placed before drivers each week, thus helping in a most effective way to keep them "on the job."

Monthly or semi-monthly meetings of drivers have been found to be helpful in accident prevention programs. If the manager considers safety as an important element of his business, a periodic meeting of drivers gives him an opportunity to stress this point, as well as the general safety policy of the company.

It is usually considered advisable to confine these meetings to a fifteen-minute period and to hold them on a specified day each month, with a semi-monthly meeting if the record becomes poor. In most cases, the best results will be obtained if they are conducted by the general manager or superintendent of drivers.

The success of drivers' meetings depends entirely upon the "punch" put into them and the interest which is aroused. The following program has proved effective:

1. Description of two or three recent accidents or near accidents with explanations of how they might have been avoided (drivers' names are not mentioned).
2. Comments on meritorious acts of drivers, mentioning the men by name.
3. Brief discussion of good records of drivers of other companies.
4. Five-minute talk by general manager or superintendent on some one important phase of driving, such as: "Skidding," "Taking a Chance," "Children in the Street," "Right of Way," "Railroad Grade Crossings," "The Pedestrian," etc.

The following suggested talk to drivers is offered as a guide to the manager or superintendent in preparing his remarks for one of the meetings. The inclusion of local facts and specific illustrations of company experience will frequently increase the effectiveness of the talks.

Here is a typical talk given to drivers by one fleet operator:

"The pedestrian is the driver's chief concern. The accident records of practically every city show that from 50 to 65 per cent. of the persons killed or injured in automobile accidents are pedestrians. Of these about 40 per cent. are children.

"Those who walk are vastly in the majority. At any hour of the day you probably can count a hundred people walking in the street for every one person who is driving. Nearly all persons are pedestrians part of each day, and, young and old alike, continue to take chances in crossing the street because they do not yet fully understand that dangers of modern street traffic must be guarded against constantly.

"This situation does not relieve the driver of responsibility if he hits someone. It is generally recognized that the pedestrian has as much right on the street as the driver. We all know that when an accident happens the majority of people blame the driver, and juries usually give the pedestrian the advantage of the doubt.

"Now what does all this mean to you as a driver? It means that pedestrians know they have certain rights on the streets and they are going to demand those rights. But in many cases you must do their thinking for them. It is useless for you to waste your time arguing about who is to blame in the event of an accident. What you need to do is to face the fact that we will always have pedestrians swarming our streets, and among them you will find a lot of people who are reckless and careless, and a large number of children who are not responsible. These two classes present the most serious problem for you. You will also find old people who become confused and lose control of themselves, deaf people who cannot hear your horn, cripples who cannot take care of themselves, nervous women who become frightened and do the wrong thing, and mothers with children who cannot hurry.

"Another serious problem for you is the street intersection—the place where people are taught to cross.

(Continued on Page 10)

RIMAC TOOL AND EQUIPMENT CATALOGUE

The Rinck-McIlwaine, Inc., is issuing a new catalogue showing its complete line of tools and equipment for automotive use. This publication covers the Rimac heavy duty valve refacer, spring testers, carbon brushes, battery terminal brushes, gasoline cleaning brushes, wire brush wheels for use with drills and bench grinders, rotary brushes, grease fitting tools, contact point commutators, valve tools, adapters, thickness gauges, spark plug wrenches, coil files, license and Rimac Hexset taps and dies. This latter item is a new offering by the company.

TWIST DRILLS IN CASE

The Union Twist Drill Company is placing on the market two drill sets in Huot index cases. This case is a metal box into which panels for the drills hinge and fold. The holes in the panels are individually drilled and dirll sizes equivalent to tap sizes are marked on the panels below each drill.

The set No. 118 carries carbon steel drills from 1/16 to 1/2 inch by 1/64 inch in jobber lengths. The No. 119 set carries carbon steel drills, wire gauge from No. 1 to No. 60. High speed drills may be had if desired. The No. 118 set is 4 by 7 by 1¾ inches in dimensions. The No. 119 is 3¼ by 4½ by 1 inches.

Interpreting the Latest Moves in Business

(Continued from Page 2)

no other basis for business prosperity than in the constant expansion of the purchasing power of consumers who spend most of their incomes, and that uncontrolled saving or accumulation of unspendable surpluses is as impossible and dangerous to business stability as the unregulated possession of explosives is in a civilized community. The experience of the depression has shown almost every one that such accumulations are inevitably dissipated, and that to assume that they assure security for the individual or the business concern is an illusion which awaits only the inevitable depression to be dispelled.

Those in responsible authority, however, are still unable to see or unwilling to admit the underlying cause of the disease by which they are destined to be destroyed along with the rest, unless it is finally recognized and dealt with. They do not understand that this is a surplus crisis, not a deficit depression—the first of its kind in history—and that it needs other remedies than those appropriate to a deficit condition. There is in the world today a surplus of real wealth, commodities, tools, machinery, productive equipment of every kind which are adequate to supply the means of a prosperous standard of life for most of our people, but which are useless because we are faced with a deficit of the one thing necessary in our economic system to enable us to avail ourselves of them—the purchasing power, or medium of exchange which our banking system was set up to provide.

We have everything but the tickets to the show. Most of them have been destroyed during the past three years and we must stand outside till they are replaced. The problem of recovery is merely the problem of replacing those tickets. Unless they can be replaced, the few tickets that remain will purchase all the real wealth that is left; those who haven't enough of them will be unable to pay their debts and will lose what they have; and those who haven't any will take what they can get in any way they can get it.

In dealing with the problem most of our leaders and the public as well are much in the same position as our physicians were before the bacterial cause of typhoid was discovered. There were so many explanations of the disease that there could not be any agreement upon treatment. The favorite remedy for all fevers and in fact for most maladies in the early days of medicine was blood-letting. If it did not kill the patient he got well because he was strong enough to survive it. So, today, the only remedy we have been applying to our economic malady is that brutal blood-letting which we call liquidation and deflation, budget-balancing, economy and retrenchment. The patient will survive even this, for our economic system is astonishingly strong; but the convalescence will be prolonged and the patient will not be the same afterward if we rest content with such treatment.

Even the few transfusions offered by the Reconstruction Corporation and other administration doctors when he has become acutely weak will not speed recovery. At this stage of the sickness it is doubtful whether any efforts, public or private, to sustain security values and avoid debt default and repudiation by a process of credit expansion through ordinary investment or banking channels can be effective, for the individual confidence which is the basis both of supply and demand for such credit has collapsed and cannot quickly be reconstructed. It would be fortunate if there could be a sufficient restoration of purchasing power through recovery of private investment and expansion of bank credit, but the decline in values of commodities, labor and property has been so drastic that the expansion would have to be enormous and rapid if we are to avoid writing down or writing off fixed debts of individuals, business concerns, railroads, governments, banks and insurance companies through a long drawn out process of bankruptcy and receivership.

We should, as citizens and as sober-minded business men—to say nothing of public officials and financial authorities—begin to consider seriously what the inevitable next step must be, if we are forced to take it, and how we can best take it intelligently, effectively and calmly. Obviously if every effort to secure expansion of purchasing power through increasing the amount of cash or credit media of exchange in use is ineffective we shall be compelled to reduce directly the value of what we now have, so as to make possible the payment of debts stated in terms of our currency. If this should be necessary, and I trust it will not, we should be prepared to tackle the task boldly, deliberately and intelligently, with such international co-operation as we can secure, so as to make the transition with the least disturbance and with assurance of a systematic means of maintaining stability of our currency and price levels in the future. It will be unfortunate, though even then not fatal, if we continue to assume that no such necessity will ever face us until we are forced to face it in an atmosphere of ignorance and anxiety and without the concerted international action which will make it easier.

G. M. Sales During May Slightly Below April Mark

(Continued from Page 1)

Motors' sales during May show that the actual sales to consumers totaled 63,500, this compares with 81,573 units in April and 122,717 in May last year. Sales to dealers in the United States totaled 60,270, as compared with 69,029 in April and 136,778 in May last year. Total sales to dealers in the United States and Canada, plus overseas shipment for May, were 66,739 as compared with 78,359 in April and 153,730 in May last year.

Sales during the first five months of this year to consumers in the United States totaled 288,587, as compared with 490,261 during the same period last year.

Sales to dealers in the United States during the first five months of this year totaled 295,603, as compared with 525,404 during the same period of 1931. Total sales to all dealers in the United States and Canada during the first five months of this year, plus overseas shipments during the same period were 342,354, as against 612,529 last year.

The following table shows the General Motors sales or the first five months of this year with comparative figures for the two previous years.

SALES TO CONSUMERS IN UNITED STATES

	1932	1931	1930	1929
January	47,942	61,566	74,167	73,989
February	46,855	68,976	88,742	110,148
March	48,717	101,339	123,781	166,942
April	81,573	135,663	142,004	173,201
May	63,500	122,717	131,817	169,034
June	.....	103,303	97,318	154,437
July	.....	85,054	80,147	147,079
August	.....	69,876	86,426	151,422
September	.....	51,740	75,805	124,723
October	.....	49,042	57,757	114,408
November	.....	34,673	41,757	68,893
December	.....	53,588	57,989	44,216
Total	.....	937,537	1,057,710	1,498,792

SALES TO DEALERS IN UNITED STATES

	1932	1931	1930	1929
January	65,382	76,681	94,458	95,441
February	52,539	80,373	110,904	141,222
March	48,383	98,943	118,081	176,510
April	69,029	132,629	132,365	176,634
May	60,270	136,778	136,169	175,873
June	.....	100,270	87,595	163,704
July	.....	78,723	70,716	157,111
August	.....	62,667	76,140	147,351
September	.....	47,895	69,901	127,220
October	.....	21,305	22,924	98,559
November	.....	23,716	48,155	39,745
December	.....	68,650	68,252	36,482
Total	.....	928,630	1,035,660	1,535,852

TOTAL SALES TO DEALERS IN U. S. AND CANADA, PLUS OVERSEAS SHIPMENTS

	1932	1931	1930	1929
January	74,710	89,349	106,509	127,580
February	62,850	96,003	126,196	175,148
March	59,696	119,195	135,930	220,391
April	78,359	154,252	150,661	227,718
May	66,739	153,730	147,483	220,277
June	.....	111,668	97,440	200,754
July	.....	87,449	79,976	189,428
August	.....	70,078	85,610	168,185
September	.....	58,122	78,792	146,483
October	.....	25,975	28,253	122,104
November	.....	29,359	57,257	60,977
December	.....	79,529	80,008	40,222
Total	.....	1,074,709	1,174,115	1,899,267

Unit sales of Chevrolet, Pontiac, Oldsmobile, Buick, La Salle and Cadillac passenger and commercial cars are included in the above figure.

THIS SALESMAN TELLS WHO ARE HIS BEST PROSPECTS

(Continued from Page 3)

are "crazy to buy a new car in these times" are a constant source of trouble at present. This condition, of course, holds true all over the country, and makes it necessary to close sales with despatch.

Salesmen of the Stewart Motor Company, of which there are four, including Mr. Resel, but not including the manager, P. T. Stewart, follow a fixed policy of making ten calls a day. Names of prospects are taken from a card index file kept in the office. Most of the calls, as indicated above, are made after 6 o'clock in the evening.

The entire staff keeps on the alert for leads. If a car stops in front of the showrooms, and the occupant declines to come in, his license plate number is taken. The number is looked up and the name added to the prospect list.

The customer, once sold, must not be forgotten, Mr. Resel emphasized. Stopping around to see the new car owner occasionally and inquiring as to the performance of his car works wonders in developing good will and building future sales.

SAFETY PRACTICES IN FLEET OPERATION BECOME HABITUAL

(Continued from Page 9)

Naturally they think this is the safest place. Therefore, the only safe rule for you to follow when approaching a street intersection is to assume that someone is about to cross and have your machine under perfect control.

"When you think of the conditions which exist on our streets, the careless and reckless people, the jaywalkers, the children and the people who cannot take care of themselves—and this condition is growing worse every day—you can see that unless a driver learns to be a careful driver, sooner or later he is going to get caught and taken into court to explain to the judge and jury why he killed or seriously injured some person."

Under present traffic conditions, skilled operation of vehicles may have a direct bearing upon the financial success of a company using vehicles on the streets and highways. The following factors have been found to be important in keeping accident costs at a minimum:

1. A firm company policy regarding safety.
2. Safe maintenance of equipment.
3. Careful selection of drivers.
4. Monthly tabulation of accident records.
5. "No Accident" bonus plan.
6. Conduct of continuous program of safety education among drivers, including:
   (a) Safety advertising.
   (b) Meetings of drivers.

MAJOR SPECIFICATIONS AND MECHANICAL DETAILS

Make and Model	Weight—5-P. Sedan	Wheel Base	Engine Make	Thermostat Used	Valve Arrangement	Cylinders	Bore and Stroke	Piston Disp	Compression Ratio	Tax H. P.	Brake, H.P. and Peak R. P. M.	Pist. Make or Material	No. Main Br.	Oil Purifier	Fuel Cleaner	Carburetor	Air Cleaner
Auburn 8-100	3675	127–136	Lyc	Dole	L	8	3 x4¾	268.6	5.26	28.8	100@3400	°Alum	5	Pur	No	Str	AC
Auburn 12-160	4465	133	Lyc	Dole	HO	12	3⅛x4¼	391.1	5.50	46.8	160@3400	°Alum	4	Pur	Ste	Str	AC
Austin	§1150	75	Own	No	L	4	2.2x3	45.6	5.10	7.8	13@3000	Alum	2	No	No	Til	No
Buick 32-50	3450	114	Own	Bish-Bab	O	8	2⅛x4¼	230.4	4.65	27.61	78@3200	CI	5	AC	AC	Mar	AC
Buick 32-60	3980	118	Own	Bish-Bab	O	8	3⅛x4⅜	272.6	4.63	30.02	90@3000	CI	5	AC	AC	Mar	AC
Buick 32-80	4450	126	Own	Bish-Bab	O	8	3⅛x5	344.8	4.40	35.12	104@2900	CI	5	AC	AC	Mar	AC
Buick 32-90	4565	134	Own	Bish-Bab	O	8	3⅛x5	344.8	4.40	35.12	104@2900	CI	5	AC	AC	Mar	AC
Cadillac 355 B	4885	134-140	Own	Har	L	8	3⅜x4⅛	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Cadillac 370 B	5175	134-140	Own	Har	O	12	3⅛x4	368.0	5.30	46.9	135@3400	CI	4	Cuno	AC	DL	AC
Cadillac 452 B	5625	143-149	Own	Har	O	16	3 x4	452.0	5.36	57.5	165@3400	CI	5	Cuno	AC	DL	AC
Chevrolet	2770	109	Own	No	O	6	3⅛x3¾	194	5.20	26.3	60@3000	CI	3	No	Yes	Car	AC
Chrysler 6	3120	116	§Own	Yes	L	6	3¼x4½	223.9	5.35	25.35	82@3400	°Alum	4	Pur	Yes	B & B	Yes
Chrysler 8	3860	125	§Own	Yes	L	8	3¼x4½	298.6	5.20	33.80	100@3400	°Alum	5	Pur	Yes	Str	Yes
Chrysler Imp. 8	——	135	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	°Alum	9	Pur	Yes	Str	Yes
Chrysler Imp. 8 cus.	——	146	§Own	Yes	L	8	3½x5	384.8	5.20	39.20	125@3200	°Alum	9	Pur	Yes	Str	Yes
Cord (Fr. Wh. D.)	4620	137½	Lyc	Dole	L	8	3¼x4½	298.6	5.25	33.8	115@3300	°Alum	5	Pur	AC	Sch	No
De Soto Six	3008	113	§Own	Yes	L	6	3¼x4¼	211.5	5.35	25.35	75@3400	°Alum	4	Pur	Yes	B & B	Yes
De Vaux 6-80	2810	114	Con	Dole	L	6	3⅜x4	214.7	5.20	27.34	75@3600	Alum	4	—	Yes	Til	AC
Dodge Six D L	3084	114¼	§Own	Yes	L	6	3¼x4⅜	217.7	5.35	25.35	79@3400	Alum	4	Pur	Yes	Car	Yes
Dodge Eight D K	3488	122	§Own	Yes	L	8	3¼x4¼	282.1	5.20	33.80	90@3400	Alum	5	Pur	Yes	Str	Yes
Essex-Gr. Su. 6 Std.	2870	113	†Own	No	L	6	2⅞x4¾	193.0	5.50	20.7	70@3200	Alum	3	No	Ste	Mar	AC
Ford A	2357	106	Own	No	L	4	3⅛x4¼	200.5	4.60	24.03	50@2600	Alum	3	—	—	Zen	—
Ford V8	†2447	106	Own	No	L	8	3⅛x3¾	220.0	5.50	30.0	65@3400	Alum	3	—	—	DL	—
Franklin Airman	——	132	°Own	Ful	O	6	3⅛x4¾	——	5.10	——	100@3100	°Alum	7	Pur	Yes	Str	Yes
Franklin V-12	——	144	°Own	Ful	O	12	3¼x4	398.0	5.12	——	150@3100	°Alum	7	Pur	Yes	Str	Yes
Graham 6	3205	113	Own	Yes	L	6	3⅛x4½	207	5.45	23.4	70@3200	°Alum	7	No	AC	Sch	AC
Graham 8	3665	123	Own	Bish-Bab	L	8	3⅛x4	245.4	6.50	31.25	90@3400	°Alum	5	AC	AC	DL	AC
Hudson Gr. 8 Std.	3270	119-126-132	†Own	No	L	8	3 x4½	254.1	5.80	28.8	101@3600	Alum	5	No	Ste	Mar	AC
Hupmobile 216	3115	116	Own	Bish-Bab	L	6	3⅜x4¼	228.1	5.00	27.34	75@3200	°Alum	4	••	Ste	Str	AC
Hupmobile 222	3580	122	Own	Bish-Bab	L	8	2⅞x4⅝	250.7	5.40	27.61	93@3200	Alum	5	Pur	Ste	Str	AC
Hupmobile 226	3755	126	Own	Bish-Bab	L	8	3⅛x4¾	279.9	5.47	30.10	103@3200	Alum	5	Pur	Ste	Str	AC
La Salle 345 B	4840	130–136	Own	Har	L	8	3⅜x4⅛	353.0	5.38	36.4	115@3000	CI	3	AC	AC	Own	AC
Lincoln V-8	5430	136	Own	Yes	L	8	3½x5	384.0	5.23	39.2	125@2900	Alum	5	No	AC	Str	AC
Lincoln V-12	5750	145	Own	Yes	L	12	3¼x4½	448.0	5.25	50.7	150@3400	Alum	7	No	AC	Str	AC
Marmon 8	3500	125	Own	Yes	L	8	3¼x4¾	315.2	5.50	33.8	125@3400	Alum	5	Flo	AC	Str	AC
Marmon 16	5360	145	Own	Pines	O	16	3¼x4	490.8	5.75	62.5	200@3400	Alum	5	†	AC	Str	AC
Nash Big Six	3200	116	Own	Bish-Bab	L	6	3⅛x4⅜	201.3	5.10	23.4	70@3000	°Alum	7	Pur	AC	Str	AC
Nash Stand. Eight	3400	121	Own	Bish-Bab	L	8	3 x4⅜	247.4	5.10	28.8	85@3200	°Alum	9	Pur	AC	Str	AC
Nash Spec. Eight	3870	128	Own	Bish-Bab	O	8	3⅛x4¼	260.8	5.25	31.2	100@3400	°Alum	9	Pur	AC	Str	AC
Nash Adv. Eight	4350	133	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	°Alum	9	Pur	AC	Str	AC
Nash Ambas. Eight	4510	142	Own	Bish-Bab	O	8	3⅜x4½	322.0	5.25	36.4	125@3600	°Alum	9	Pur	AC	Str	AC
Oldsmobile F-32	3035	116½	Own	No	L	6	3⅛x4⅛	213.3	5.80	26.3	74@3200	CI	4	AC	AC	Str	AC
Oldsmobile L-32	3165	116½	Own	No	L	8	3 x4⅛	240.3	5.90	28.8	87@3350	CI	5	AC	AC	Str	AC
Packard Twin Six	5225	142–147	Own	Yes	L	12	3⅛x4	445.5	6.00	56.0	160@3200	°Alum	4	Yes	Yes	Own	AC
Packard Stan. 8	4570	130–137	Own	Yes	L	8	3⅜x5	320.0	6.00	32.5	110@3200	°Alum	9	Yes	Yes	Own	AC
Packard De L. 8	5045	142–147	Own	Yes	L	8	3½x5	384.8	6.00	39.2	135@3200	°Alum	9	Yes	Yes	Own	AC
Packard Light 8	4115	127¾	Own	Yes	L	8	3⅜x5	320.0	6.00	32.50	110@3200	°Alum	9	Yes	Yes	Own	AC
Peerless De L. Mas.	4521	125	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	115@3200	°Alum	5	Pur	AC	Sch	AC
Peerless De L. Cus.	4766	138	Con	Bish-Bab	L	8	3⅜x4½	322	5.00	36.45	120@3200	°Alum	5	Pur	AC	Sch	AC
Pierce-Arrow 54	4819	137-142	Own	Pines	L	8	3½x4¾	366	5.05	39.2	125@3000	°Alum	9	Pur	Ste	Str	AC
Pierce-Arrow 52	5080	142-147	Own	Pines	L	12	3⅜x4	429	5.05	54.6	150@3200	°Alum	7	Pur	Ste	Str	AC
Pierce-Arrow 53	5395	137-142	Own	Pines	L	12	3¼x4	398	5.05	50.7	140@3200	°Alum	7	Pur	Ste	Str	AC
Plymouth	2875	112	§Own	No	L	4	3⅝x4¾	196.1	4.90	21.03	65@3200	Alum	3	Yes	AC	B & B	Yes
Pontiac 6	2870	114	Own	Yes	L	6	3⅛x3⅞	200.0	5.10	26.3	65@3200	CI	3	No	AC	Mar	Yes
Pontiac V-8	3225	117	Own	Yes	H	8	3⅛x3⅜	251.0	5.20	37.8	85@3200	CI	3	No	AC	Mar	Yes
Reo Fly. Cloud "S"	3405	117	Own	Yes	L	6	3⅛x5	230.0	5.30	23.4	80@3200	Lo-Ex	7	Yes	Yes	Zen	Yes
Reo Royale Cust.	4650	135	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo Royale	4375	131	Own	Pines	L	8	3⅜x5	358	5.30	36.48	125@3300	Alum	9	Han	AC	Sch	Own
Reo 8-25	4050	125	Own	Yes	L	8	3 x4¾	268.6	5.37	28.8	90@3300	°Alum	5	Han	V S	Sch	Un
Rockne 6-65	2595	110	Own	Dole	L	6	3⅛x4⅛	189.8	5.00	23.4	66@3200	CI	4	No	AC	Str	No
Rockne 6-75	3000	114	Own	Dole	L	6	3¼x4⅛	205.3	5.00	25.4	72@3200	CI	4	Own	AC	Str	No
Studebaker 6-55	3170	117	Own	Dole	L	6	3¼x4⅝	230.0	5.00	25.4	80@3200	CI	4	No	Ste	Str	No
Studebaker Dict. 62	3240	117	Own	Bish-Bab	L	8	3⅛x3¾	221.0	5.00	30.0	85@3200	CI	9	Pur	Ste	Str	AC
Studebaker Com. 71	3545	125	Own	Bish-Bab	L	8	3⅛x4¼	250.4	5.20	30.0	101@3200	°Alum	9	Pur	Ste	Str	AC
Studebaker Pres. 91	4260	135	Own	Dole	L	8	3½x4⅜	337.0	5.10	39.2	122@3200	°Alum	9	Han	Ste	Str	AM
Stutz LAA	4383	127½	Own	No	O	6	3⅜x4½	241.5	5.50	27.3	85@3150	°Alum	7	Pur	AC	Zen	Un
Stutz SV-16	4885	134½-145	Own	No	O	8	3⅜x4½	322	5.50	36.4	113@3300	°Alum	9	Pur	AC	Zen	AM
Stutz DV 32	5281	134½-145	Own	Bish-Bab	O	8	3⅜x4½	322	5.10	36.4	156@3900	°Alum	9	Pur	Ste	Str	AC
Willys-Ov'land 6-90	2814	113	Own	Yes	L	6	3¼x3⅞	193.0	5.26	25.35	65@3400	CI	4	No	AC	Til	Til
Willys-Ov'land 8-88	3250	121	Own	Yes	L	8	3⅛x4	245.4	5.26	31.25	80@3200	CI	5	No	AC	Til	AC
Willys-Kni. 66-D	3775	121	Own	Yes	K	6	3⅜x4¾	255.0	5.50	27.34	87@3200	°Alum	7	Pur	Til	Til	AC
Willys-Knight 95	3031	113	Own	Yes	K	6	2⅞x4⅜	177.9	5.55	20.70	60@3400	°Alum	7	Pur	AC	Til	AC

Gumming Characteristics Of Gasoline*

(Continued from Page 8)

By OSCAR C. BRIDGEMAN
Bureau of Standards

*A paper presented at mid-year meeting of American Petroleum Institute.

tion, it is possible to obtain from the experimental data on each gasoline a value representing, with moderate accuracy, the induction period at storage temperature. A summary of the data on the 12 gasolines is given in Table 4, where the first column represents the observed induction periods in hours at 100 deg. C. and 100 lb. per sq. in. oxygen pressure; the second column represents the true induction periods in hours at 100 deg. C. and 1 atmosphere air pressure; while the last two columns represent the predicted stability of these gasolines in months at the storage temperatures of 40 deg. C. and 30 deg. C. computed from equation (3).

One important point brought to light in this study of the effect of temperature was the fact that two gasolines might have the same induction period at 100 deg. C. and yet have quite different induction periods at storage temperatures. Similarly two gasolines might be equally stable in storage and yet have considerably different induction periods at 100 deg. C. These conclusions are corroborated by the data in Table 4, and are illustrated

TABLE 4
Summary of Stability Data on Gasolines Investigated

Fuel No.	Observed Induction Period at 100 Lb. per Sq. In. of Oxygen (Hours)	True Induction Period at 1 Atmosphere Air 100 Deg. C (Hours)	Calculated Induction Period at 1 Atmosphere Air 40 Deg. C. (Months)	30 Deg. C. (Months)
A	2.9	2.8	2.5	7.3
B	1.2	0.7	0.1	0.3
C	1.6	1.2	0.1	0.3
D	3.1	3.1	2.6	9.9
E	2.9	2.8	2.0	7.2
F	1.9	1.6	1.9	7.9
G	3.1	3.1	1.4	4.7
H	2.2	2.0	1.4	5.3
I	1.2	0.7	0.1	0.3
J	1.6	1.2	1.0	3.5
K	3.5	3.6	3.4	12.8
L	2.2	2.0	3.6	16.1

graphically in Figure 5 and 6. Accordingly, it appears necessary to measure the induction periods at a sufficient number of temperatures to make possible an extrapolation to storage temperature if even an approximate estimate of the induction period is to be obtained.

Measurement of the induction period at two or more temperatures should indicate a solution of the problem of gum stability in storage, if the induction period is a true measure of the gum-forming characteristics of the gasoline. In order to investigate this point, a series of measurements have been made of the gum contents of a number of gasolines at various times before and after the induction period, when heated under oxygen pressure at various elevated temperatures from 60 deg. to 120 deg. C. Typical results are shown in Figure 7. In every case it was found that gum formed before the end of the induction period. This was also observed when air was used instead of oxygen. Since the amounts of gum formed in most cases were considerably in excess of any reasonable value for permissible gum content, it seems very doubtful whether measurement of induction periods gives any real indication of gum stability in storage. A more rational procedure would be to measure the gum contents at various periods of time when the gasolines are heated at a number of elevated temperatures and by extrapolation to obtain information on the predicted times at sorge temperatures at which the gum content would reach various values. Work along this line is in active progress.

The aggregate amount of gum which can be deposited in the intake manifold and on the intake valves, over a reasonable period of time without interfering with engine performance, is the criterion which determines the permissible gum content of gasolines. Since the gasoline may be only partially evaporated in the induction system, and since some of the gum formed by evaporation of fine droplets in the air stream may be carried into the cylinder, the total amount of gum deposited should be less than the total gum content of the gasoline consumed. Under any given set of operating conditions, the relative amounts of gum deposits by two gasolines of similar volatility should be equal to the relative gum contents of the two gasolines. If the volatiles of the two gasolines are quite different, deviations from this conclusion would be anticipated.

The total amount of gum deposited from any given gasoline may depend upon the degree of vaporization in the manifold, the percentage of liquid carried into the cylinders unvaporized, the temperature of the manifold walls and of the intake valves and seats, the temperature of the charge, and the design of the manifold system—some of which are inter-related. Accordingly, in order to determine the permissible gum content of gasolines, it is necessary to investigate the effect of the variables mentioned. Little work has been done on this phase of the investigation as yet, but plans have been formulated for a comprehensive study along these lines. Since it would be a gigantic task to investigate all of these variables in a number of cars on the road and with a number of gasolines, it is planned to construct model induction systems and carry on the major portion of the investigation in the laboratory. Final check with gum deposition in cars on the road will, of course, be necessary; but the laboratory work should yield much information of value, not only on permissible gum contents but also on possible modifications in manifold design tending towards minimizing gum deposition.

OF PRESENT AMERICAN PASSENGER CAR MODELS

Make and Model	Front End Drive	Ignition System	Gen. and Starter	Clutch	Transmission Make	Transmission Speeds	Transmission Type	Universals	Rear Axle	Ratio	Brakes	Steering Gear	Springs Rear	Spring Shackles	Chassis Lubric.	Tires
Auburn 8-100	Chain	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	U	Col	*4.70	M	Ross	S 56¾	Own	Bijur	*17x5.50
Auburn 12-160	Link	Del-R	*Del-R-S	Long	D	3	SM-LGS-F	M	Col ½	*4.08	Bendix	Ross	S 56¾	Own	Bijur	*17x6.00
Austin	Gear	Aut-L	*Aut-L	Rock	WG	3	——	S	Sal ½	5.25	M	Say-B	Cant	Own	Al-Z	18x3.75
Buick 32-50	Tex	Del-R	Del-R	*Own	O	3	SM-BW-F	O	Own ½	4.60	Own	Sag	S 56	Tryon	Al-Z	18x5 50
Buick 32-60	Tex	Del-R	Del-R	*Own	O	3	SM-BW-F	O	Own ¾	4.54	Own	Sag	S 55¼	Own	Al-Z	18x6.00
Buick 32-80	Tex	Del-R	Del-R	*Own	O	3	SM-BW-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Buick 32-90	Tex	Del-R	Del-R	*Own	O	3	SM-BW-F	O	Own ¾	4.27	Own	Sag	S 58⅞	Own	Al-Z	18x7.00
Cadillac 355 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Cadillac 370 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.80	Own M	Sag	S 58	Own	Alem	17x7.50
Cadillac 452 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.64	Own M	Sag	S 60	Own	Alem	18x7.50
Chevrolet	Gear	Del-R	*Del-R	Own	O	3	SM-F	—	Own ½	4.10	M	Own	S 54	Own	Alem	18x5.25
Chrysler 6	Chain	Del-R	Del-R	*—	O	3	—— F	—	Own ½	4.60	H	Own	S 53⅜	——	Alem	18x5.50
Chrysler 8	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.30	H	Gem	S 54⅝	——	Alem	17x6.50
Chrysler Imp. 8	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.00
Chrysler Imp. 8 Cus.	Chain	Del-R	Del-R	*—	O	4	—— F	—	Own ½	4.10	H	Gem	S 57½	——	Al-Z	17x7.50
Cord (Fr. Wh. Dr.)	Link	Del-R	*Del-R	Long	D	3	——	*	Col F	4.80	H	Gem	S 62	Own	Bijur	18x7.00
De Soto Six	Chain	Del-R	Del-R	*Own	O	3	O-F	—	Own ½	4.62	H	Own	S 53⅜	——	Alem	18x5.25
De Vaux 6-80	Morse	Aut-L	*Aut-L	Borg	W	3	——	S	‡AD ½	4.40	M	†W	S 54¼	Tryon	Al-Z	19x5.25
Dodge Six D L	Chain	Del-R	—	—	O	3	—— F	—	Own ½	4.60	H	Own	S 54⅞	——	Al-Z	18x5 50
Dodge Eight D K	Chain	Del-R	Del-R	*—	O	3	—— F	—	Own ½	4.10	H	Gem	S 55	——	Al-Z	18x6.00
Essex Gr. Su. 6	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	4.63	Bendix	Gem	S 54⅛	Own	Alem	18x5.25
Ford A	Var-G	Own	*Own	Own	O	3	SM	O	Own ¾	4.11	M	Gem	S-Tr 39	Own	Al-Z	18x5.25
Ford V8	Var-G	Own	*Own	Own	O	3	SM	O	Own ¾	4.11	M	Gem	S-Tr	Own	Al-Z	18x5.25
Franklin Airman	Chain	Del-R	*Del-R-S	—	W	3	SM-BW-F	M	— ½	4.73	H	Gem	El 42	——	Al-Z	19x6.50
Franklin V-12	Chain	Del-R	*Del-R-S	Long	W	3	SM-BW-F	M	Col ½	4.45	H	Ross	S 60	Fafnir	Al-Z	17x7.50
Graham 6	Link	Del-R	Del-R	Long	WG	3	WG-F	U	Sal ½	4.45	H	Ross	S 54	ERS	Al-Z	17x5.50
Graham 8	Link	Del-R	Del-R	Long	WG	3	SM-WG-F	S	Sal ½	4.30	H	Ross	S 54	ERS	Al-Z	17x6.00
Hudson Greater 8	Morse	Aut-L	*Aut-L-S	*Own	O	3	SM-WG-F	S	Own ½	†4.63	Bendix	Gem	S 54⅛	Own	Alem	*17x6.00
Hupmobile 216	Chain	Aut-L	*A-L-S-§	Borg	WG	3	SM-WG-F	M	Spic ½	4.54	M	Ross	S 53	Tryon	Al-Z	18x5.50
Hupmobile 222	Morse	Aut-L	*A-L-S-§	Borg	WG	3	SM-WG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.00
Hupmobile 226	More	Aut-L	*A-L-S-§	Long	D	3	SM-DG-F	U	Own ½	4.36	M	Gem	S 57½	Rub-B	Al-Z	17x6.50
La Salle 345 B	Morse	Del-R	Del-R	Own	O	3	SM	S	Own ¾	4.60	Own M	Sag	S 58	Own	Alem	17x7.00
Lincoln V-8	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.00
Lincoln V-12	Chain	Aut-L	*Aut-L	Long	O	3	SM-F	S	Own F	4.58	*Bendix	Own	S 62	Own	Alem	18x7.50
Marmon 8	Diam	Del-R	*Del-R	*—	D	3	SM	S	Spic ½	4.08	Bendix	Ross	S 57	Tryon	Alem	18x6.00
Marmon 16	Diam	Del-R	Del-R	Rus	M	3	SM	S	Spic ½	3.78	Bendix	Ross	S 59½	**	Alem	18x7.00
Nash Big Six	Chain	Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.70	M	Ross	S 54	ERS	Alem	18x5.25
Nash Stand. Eight	Chain	Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.44	M	Ross	S 54	ERS	Alem	18x5.50
Nash Spec. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.43	Bendix	Gem	S 55¾	*	Bijur	17x6.50
Nash Adv. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57⅛	*	Bijur	18x7.00
Nash Ambas. Eight	Chain	*Aut-L	*A-L-S-§	Borg	O	3	SM-DG-F	O	Own ½	4.50	Bendix	Gem	S 57⅛	*	Bijur	18x7.00
Oldsmobile F-32	Chain	Del-R	Del-R	Borg	M	3	SM-BW-F	S	Own ½	4.56	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Oldsmobile L-32	Chain	Del-R	Del-R	Borg	M	3	SM-BW-F	S	Own ½	4.77	Bendix	Sag	S 54½	Tryon	Al-Z	17x6.00
Packard Twin Six	Morse	Aut-L	*Dyn	*Long	O	3	SM	M	Own ½	4.69	M	Own	S 60½	Own	Bijur	18x7.50
Packard Stan. 8	Morse	N E	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Own	Bijur	6.50x19
Packard De L. 8	Morse	N E	*Dyn	Long	O	3	SM	M	Own ½	4.66	M	Own	S 60½	Owr	Bijur	7.00x19
Packard Light 8	Morse	N E	*Dyn	*Long	O	3	SM	S	Own ½	4.66	M	Own	S 56	Own	Alem	17x6.50
Peerless De L. Mas.	Morse	Aut-L	*Aut-L	Rock	WG	3	WG-F	S	Sal ½	4.45	Bendix	Ross	S 60	Rub B	Alem	31x6.00
Peerless De L. Cus.	Morse	Aut-L	*Aut-L	Rock	WG	3	WG-F	S	Sal ½	4.80	Bendix	Ross	S 60	Rub B	Alem	31x6.50
Pierce-Arrow 54	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x6.50
Pierce-Arrow 52	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.42	Bendix	Ross	S 61	Faf	Myers	18x7.00
Pierce-Arrow 53	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.58	Bendix	Ross	S 61	Faf	Myers	18x7.00
Plymouth	Var	Del-R	Del-R	*Own	O	3	O-F	O	Own ½	4.33	H	Own	S 53⅜	——	Al-Z	18x5.25
Pontiac 6	Chain	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.55	Bendix	Sag	S 54	Inlox	Al-Z	18x5.25
Pontiac V-8	Link	Del-R	Del-R	Own	M	3	SM-BW-F	M	Own ½	4.22	Bendix	Sag	S 54½	Inlox	Al-Z	17x6.00
Reo Fly. Cloud "S"	Chain	Del-R	*Del-R-S	Long	O	3	SM-F	S	Own ½	4.60	H	Ross	S 55	Tryon	AL-Z	17x5.50
Reo Royale Cust.	Morse	Del-R	Del-R-§	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Far	6.50x18
Reo Royale	Morse	Del-R	Del-R-§	Long	O	3	SHG	U	Own ½	4.07	H	Ross	S 57½	Own	Al-Z	6.50x18
Reo 8-25	Link	Del-R	*Del-R	Long	O	3	SHG	U	Own ½	4.90	H	Ross	S 55¾	Own	Al-Z	17x6.50
Rockne 6-65	Morse	Aut-L	*Aut-L-S	Borg	WG	3	SM-BW-F	M	Spic ½	4.55	Bendix	Ross	S 54	Tryon	Al-Z	18x5.25
Rockne 6-75	Chain	Aut-L	*Aut-L-S	Long	WG	3	SM-BW-F	M	Own ½	4.73	Bendix	Ross	S 54	Tryon	Al-Z	18x5.50
Studebaker 6-55	Chain	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.27	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Dict. 62	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 54	Tryon	Alem	18x5.50
Studebaker Com. 71	Cel	Del-R	*Del-R-S	Long	O	3	SM-BW-F	S	Own ½	4.73	Bendix	Ross	S 56	Faf	Alem	18x6.00
Studebaker Pres. 91	Var-G	Del-R	*Del-R-S	Borg	O	3	SM-BW-F	S	Own ½	4.31	Bendix	Ross	S 60	Faf	Alem	18x6.50
Stutz LAA	Link	Del-R	Del-R	Borg	D	4	——	U	Sal ½	5.10	H	Gem	S 60	Own	Bijur	19x6.50
Stutz SV-16	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.75	H	Gem	S 62¾	Own	Bijur	18x7.00
Stutz DV-32	Link	Del-R	Del-R	Long	M	3	SM	M	Tim ½	4.50	H	Gem	S 62¾	Own	Bijur	18x7.00
Willys-Ov'land 6-90	Link	Aut-L	*Aut-L	Own	O	3	O-F	S	Own ½	4.60	Bendix	Own	S 51	Tryon	Alem	18x5.25
Willys-Ov'land 8-88	Link	Aut-L	*Aut-L	Borg	O	3	O-F	S	Own ½	4.40	Bendix	Ross	S 56	Tryon	Alem	18x5.50
Willys-Kni. 66-D	Link	Aut-L	*Aut-L	Rock	O	3	O-F	S	Own ½	4.18	Bendix	Ross	S 56	Tryon	Alem	17x6.00
Willys-Knight 95	Link	Aut-L	*Aut-L	Own	O	3	O-F	S	Own ½	4.89	Bendix	Gem	S 51	Tryon	Alem	18x5.50

KEY TO ABBREVATIONS

Weight — §Austin standard 2 passenger coupe. Stutz DV 145-inch wheel base weighs 5,352. †Tudor sedan.

Engine Make—Con Continental; Lyc Lycoming. *Air-cooled with spot temperature control. †Thermo syphon water circulation. §Floating power.

Thermostat—Bish-Bab, Bishop & Babcock Dole, Dole Valve Co., Chicago, Ill.; Ful, Fulton Co.; Har, Harrison; Pines, Pines Winterfront Var, various makes.

Valve Arrangement—L, L head; H horizontal. O, overhead; K, sleeve valve LV V-type L head. HO, Horizontal Opposed.

Piston Material—*Alum, aluminum with invar struts Alum, aluminum alloy CI cast iron; S, St, semi-steel; Lo-Ex, Aluminum Corporation of America.

Oil Purifier—Wal, Wall; Han, Handy; AC, AC Spark Plug Company; Ste, Stewart-Warner; Ski, Skinner; Flo, Floato; Cuno, Cuno Engineering Corp; Pur, Purolator *Using both Floato and Skinner. †Using AC with Floato attachment. **Using both AC and Purolator.

Fuel Cleaner—AC, AC Spark Plug Co.; Gas, Gascolator; Ste, Stewart-Warner; Til, Tillotson; V-S, Van Sicklen.

Carburetor—Sch, Wheeler Schebler; Zen, Zenith; Mar, Marvel; Car, Carter; Str, Stromberg; DL, Detroit Lubricator; Til, Tillotson; B&B, Ball & Ball.

Air Cleaner—AC, AC Spark Plug Company; AM, Air Maze; Un, United; Til, Tillotson

Front End Drive—Link, Link Belt; Tex, Texolite; Cel, Celeron; Diam, Diamond Chain; Morse, Morse Chain Company; Var, various makes of chains; Var-G various makes of gears.

Ignition, Generator and Starter—Aut-L, Auto-Lite; A-L, Auto-Lite; Del-R, Delco-Remy; Dyn, Owen-Dyneto Corp.; N E, North East.
*Nash.—Indicates twin ignition.
*Bendix starter used. S—Startix equipped. §Startix optional equipment.

Clutch—Borg, Borg & Beck; Br-L, Brown-Lipe; Rock, Rockford Machine; Long, Long Clutch Company; Rus, Russell Mfg. Co. *Bendix Clutch Control.

Transmission Make—D, Detroit Gear; WG, Warner Gear Company; M, Muncie Gear Company; O, Own; N, New Process Gear Corp.; W, Warner Corp.
*Franklin Transcontinent models are equipped with both Warner and Detroit 3 or 4 speed gear sets, according to body type.

Transmission Type—DG, Detroit Gear & Machine Co.; LGS, The LGS Corp.; F, Free Wheeling; SM, Synchro Mesh; BW, Borg-Warner; NP—New Process Gear Corp.; WG, Warner Gear Co.; SHG, Synchronized Herringbone Gear.

Universals—U, Detroit Universal Products; S, Spicer Mfg. Corp.; O, Own, M, Mechanics Universal Joint Company.
*Cord using Detroit Universal Products and Mechanical Universal Joint Co.

Rear Axle—Col, Columbia; Sal, Salisbury; Spic, Spicer Mfg. Corp.; Tim, Timken: N.P., New Process Gear Corp.; ½, Semi-floating; ¾, ¾ floating; F, Full floating; ‡Adams used on custom models.

Ratio—*Dual ratio optional; Hudson 132-in. wheel base models have rear axle ratio of 5.10.

Brakes—H, hydraulic; M, mechanical; Bendix, Bendix Brake Corp. *Equipped with Vacuum Booster.

Steering Gear—Gem, Gemmer; Ross, Ross Gear and Tool Company; Sag, Saginaw. Say-B, Saylor-Beall Manufacturing Company; War, Warner; N.P., New Process Gear Corp. †Ross used on custom models.

Rear Springs — S, semi-elliptic; El, full elliptic; Cant, semi-cantilever; S-Tr semi-transverse.

Spring Shackles—Tryon, Willys-Morrow Company; Rub B, Rubber Shock Insulator Company; Faf, Fafnir Bearing Company; ERS, Eaton Products, Inc.; Inlox—Inland Mfg. Co.; *Tryon, front, ERS, rear. *Own, front, ERS, rear. **Using both Rubber-B and Fafnir.

Chassis Lubricator—Alem, Alemite; Al-Z, Alemite Zerk; Bijur, Bijur Lubricating Corp.; Far, Farval. Myers—Chassis Lubricating Co.

Tires—Auburn 8 custom models equipped with 17x6.00.
*Hudson 132-in. wheel base models equipped with tires 17x6.50. Stutz 145-inch wheelbase models have 20x7.00 tires

ZINC STOCKS

New York, June 8.—Zinc stocks in the United States at the end of May totaled 132,580 short tons, compared with 132,025 tons at the end of April and 143,049 tons at the end of May, 1931, according to the American Zinc Institute.

Production in May was 18,642 tons, compared with 20,620 in April and 25,688 in May, 1931. Shipments in May totaled 18,187 tons compared with 18,046 in April and 25,851 in May, 1931.

INDIA TYRE, LTD.

London, June 8.—Statement of India Tyre & Rubber Company, Ltd., for year ended December 31, 1931, shows a net loss of £161,186 after depreciation, interest, directors' fees, etc.

L. A. YOUNG

Detroit, June 8.—L. A. Young Spring & Wire Company declared a dividend of 25 cents, payable July 1 to stock of record June 20. In the two preceding quarters similar payments were made.

RESPONSIBILITY LAW ADOPTED IN MASS.

Boston, Mass., June 8.—A victory for insurance interests came in the Senate yesterday when that body passed the so-called "financial responsibility bill." Efforts have been made for some years past on behalf of insurance companies to bring about amendment to the law with respect to personal injuries. This measure, previously passed in the House, provides that a person causing property damage with an automobile will be ruled off the road if he fails to satisfy judgment against him within sixty days. The financial responsibility plan was the subject of much discussion at a special session held last fall on compulsory automobile insurance.

TRIPLEX, LTD.

London, June 8.—Directors of Triplex Safety Glass Company, Ltd., have recommended reduction of the company's capital to £200,000 from £400,000, by return of capital of 10 shillings a share.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS

FINANCIAL NEWS

(Continued from Page 2)

OCCIDENTAL PETROLEUM

New York, June 8.—Occidental Petroleum Corporation, year ended December 31: Net loss, after depreciation, depletion, Federal taxes, development expenses and other charges, $86,268, against $20,538 loss in 1930.

OIL PRODUCTION

Tulsa, Okla., June 8.—Daily average production of crude oil in the United States during the week ended June 4 totaled 2,169,903 barrels, an increase of 2,580 barrels over the preceding week, according to the Oil and Gas Journal.

STEWART DIRECTOR IN S. O.

New York, June 8.—R. G. Stewart, president of the Pan American Foreign Corporation, has been elected an additional director of the Standard Oil Company of New Jersey, it was announced following the annual meeting of stockholders yesterday. Other directors of the company were re-elected.

AUBURN

Auburn, Ind., June 8.—Auburn Automobile declared a stock dividend of 2 per cent. on the common, payable July 1 to stock of record June 21.

RED BANK OIL

New York, June 8.—Red Bank Oil Company, year ended December 31: Deficit, after interest, depreciation, loss on leases abandoned, loss on properties sold or abandoned and other charges, $997,654, contrasted with $160,964 income in 1930.

AUTOMATIC ELECTRIC HEADER

The National Machinery Company is producing an automatic electric header under the Kobert patents. In this machine cold stock is fed into the unit, cut to length, heated to the proper temperature for forging by multi-stage electric heating and is then headed. The heating is localized in the header part of the machine. It is carried out in three stages by means of low voltage transformers. The heating is done very rapidly and the time between heating and heading is so short, it is claimed, that no scale forms. In this way the heads are well finished, having the physical and metallurgical quality of hot headed work. The shanks have a finish similar to cold headed, solid die work.

The machine can be set for feeding the stock from a coil or it can be provided with a magazine for feeding blanks cut to the desired length. When the magazine feed is used the machine will head blanks that have been threaded or machined on the opposite end. Operation is automatic and continuous, a finished piece being ejected with every stroke.

The header is designed for use with steel and with non-ferrous metals. It is stated that alloy steels which cannot be headed by the cold heading process can be handled in this machine. In one stroke and with no annealing the machine will head non-ferrous metals which require two or three subsequent reheadings with an anneal before each. It is also claimed that work with large diameter heads or heads having irregular shapes, which call for much machining when worked from bar stock, can be produced economically with this machine.

SOLDERING SALTS

The American Solder & Flux Company is offering Tinol soldering salts. This product is claimed to be capable of penetrating grease, rust or paint to permit soldering of all metals with minimum preparation. The salts are especially recommended for use in sheet metal work.

The salts come in powder form and is applied in that way and then heated. The product will coat all metals, brass, copper, sheet or cast iron, rustless steel, Monel metal, aluminum and other metals and their alloys. The salts may be used for retinning or in the repair of old and corroded seams. The manufacturers claim that the salts will penetrate beneath seams to allow soldering where it is usually impossible, even with raw acid as a flux.

KEEP YOUR PRESENT LINE · BUT TAKE ON CONTINENTAL DE VAUX

abandon the obsolete single franchise idea

You can't go on losing or breaking even forever. Now . . . BEFORE Fall and Winter months . . . put your house in order. Get the additional sales you need to put your business on a paying basis. Wise merchandisers say: "*Abandon the worn-out idea of a single franchise!* Enlarge your market with a companion franchise. You'll close more deals if you have something to offer every prospect." The big surprise comes when you learn how easy it is to take on and operate the Continental-De Vaux Franchise. Capital requirements are very small and your present overhead is but slightly increased. The complete story awaits your inquiry.

The DeVaux Franchise Brings You

- merchandise for all your prospects; 96% of cars sold are priced below $1000
- new advertising, new publicity, new "life" in your entire operation
- low-priced, easily-sold trade-ins of standard make
- free rein to trade at your price; no rival companies in your city selling the same car
- LOW Pre-Service and "Free" After-Service Costs; $5 per car, last year's average
- public interest in the one low-priced car with INDIVIDUALITY
- an automobile you can proudly sell as a "second car" to owners of expensive automobiles.

CONTINENTAL DE VAUX 80

Built by Continental

(Sales Prestige! Everyone Knows Continental's Reputation)

Powered by Continental

(Famous "Red Seal" Continental Motor)

PRICES START AT

$725

F. O. B. FACTORY

R. H. MULCH, General Sales Manager,
Continental-De Vaux Company,
Grand Rapids, Michigan

Dear Sir:
Send me complete details regarding the 1932 Continental-De Vaux Franchise.

Name_____

Address_____

Now Handling_____

ADN 13